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COVER PHOTOGRAPH

A fish market in Fiji reflects a population issue in the South Pacific – increasing population density because growth rates are not slowing down through fertility decline as elsewhere in the ESCAP region. Some island countries and territories are trying to reduce such growth by fostering international migration. This issue of the *Asia-Pacific Population Journal* focuses on a number of issues related to international migration in the Pacific and internal migration in Viet Nam as well as one of the consequences of rapid fertility decline in Sri Lanka. Factors affecting the wide variations in India's fertility experience are considered in a fourth paper. (Photograph courtesy of Mr. Nibhon Debavalya)

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Migration and Employment in Ho Chi Minh City 3

Data obtained from a 1994 survey of migrants to Ho Chi Minh City form the basis for this study. The analysis finds that, following the Government's economic liberalization policies since 1986, the City's growth rate between 1989 and 1994 was 3.5 per cent annually, with the rate of natural increase being about 1.6 per cent and that of migration 1.9 per cent annually. Migration since 1989 has been concentrated in the age group 15-29 and is composed of a greater proportion of females than previously. More of recent migrants are single and have moved to attend school. Among females, there has been an increase in the proportion migrating for economic reasons. The article concludes with a number of recommendations for policy purposes.

Recent Trends in International Migration and Economic Development in the South Pacific 23

Migration from a number of countries and territories in the South Pacific was high in the second half of the 1980s, but has declined since 1990 owing to changes in the economic situation and the migration policies of host countries. Even though unemployment among islander migrants shot up to high levels in Australia and New Zealand during the aforementioned period in the 1980s, island societies have continued to encourage migration including "brain drain" for the purpose of promoting remittances, one of their two major external sources of foreign exchange, the other being international aid. The article concludes that sustainable development for the island societies cannot be based on the migration of unskilled workers. Among the several recommendations it makes is one calling for upgrading the quality of primary and secondary universal education; another is the provision of equal opportunity employment, without regard to gender, and social and ethnic origins.

Demographic Implications of Health Care in Sri Lanka 47

Population projections for Sri Lanka for the next 25 years show that the ageing process will gradually gather momentum. By 2020, the country will experience South Asia's most rapid population ageing. This phenomenon will demand that a higher proportion of financial and human resources be allocated for health care services in the coming decades. The article makes a number of recommendations for policy and programme purposes in this regard.

Migration and Employment in Ho Chi Minh City

Females predominate among migrants to Ho Chi Minh City. Generally migrants are better educated and earn more than non-migrants, have similar unemployment rates and are more likely to be employed in the formal sector

By Truong Si Anh, Patrick Gubry, Vu Thi Hong and Jerrold W. Huguet*

Ho Chi Minh City is the largest city in Viet Nam, with a population estimated to be 4.7 million in 1994. The annual population growth rate of 3.5 per cent for the metropolitan area is also one of the highest in the country. Ho Chi Minh City is the main economic centre of southern Viet Nam. The economy is based largely on light manufacturing, construction,

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trade and sales, and government services. It had attracted three-fourths of the foreign investment approved up to February 1993 (United Nations, 1995).

Population growth in Ho Chi Minh City (HCMC) has been spurred by economic growth. The gross domestic product (GDP) per capita of the city was estimated to equal US$ 810 in 1994, after increasing by an average of 7.8 per cent per annum over the previous three years. Per capita GDP in the city is about triple the national average.

All sectors of the economy attract migrants, and the occupational distribution of migrants does not differ much from that of non-migrants. Migration is an important component of population growth in Ho Chi Minh City and other large cities in Viet Nam and the volume of migration is believed to be increasing. Nonetheless, little research has been carried out on migration to urban areas.

Study design

The Institute for Economic Research (IER) of Ho Chi Minh City conducted a survey of migrants in September 1994 in order to learn more about the migrants and their economic role in the city.[1]

Ho Chi Minh City comprises twelve inner and six peripheral districts, which are divided into a total of 282 sub-districts. The 18 districts could be considered as corresponding to the metropolitan area, with some agricultural land being included in the peripheral districts. For the migration survey conducted by IER, one peripheral district thought to contain few migrants was excluded, then two sub-districts were selected at random from each of the other 17 districts. From each of the resulting 34 sub-districts, one residence block was randomly selected. A residence block consists of 400 to 600 households.

The sample frame was prepared by the local authorities, who compiled a list of all 19,109 households in the 34 selected residence blocks. The household listing contained basic information about all household members, including their duration of residence in the city. Households were defined to be migrant households if they contained at least one person who had migrated to the city in the past 10 years, or after 1 April 1984 (the date used to define migrants in the 1989 population census). All other households were considered to be non-migrant households.

One thousand households were randomly selected to be administered the detailed questionnaire – 800 migrant households and 200 non-migrant

households. The questionnaire was based on one designed for migration surveys by ESCAP (1980); it was modified with technical assistance from the Centre Français sur la Population et le Développement (CEPED). The first section of the questionnaire obtained basic demographic and socio-economic data from all household members. There were 5,807 persons in the 1,000 households.

The detailed individual questionnaire was administered to one migrant randomly selected among the migrants in each of the 800 migrant households, and to one person randomly selected from each of the 200 non-migrant households. Inspection of the completed questionnaires revealed that the local authorities had not applied the definition of a migrant correctly for 96 of the individual respondents. Of those, 89 had moved only within the city and 7 had moved in before 1 April 1984. Consequently, of the 1,000 individual respondents only 704 were defined to be migrants and 296 were non-migrants, as illustrated in table 1.

For purposes of analysis, the 704 migrants were divided into two categories: (a) 362 who had migrated to the city between 1 April 1984 and 31 December 1989, and (b) 342 who had migrated between 1 January 1990 and the time of the survey, September 1994. As the two periods are not of equal length, in order to compare them, the number of migrants per month was calculated. For the earlier period, there were 5.2 individual respondents per month, and for the latter period, 6.0.

If the volume of migration to Ho Chi Minh City had been increasing rapidly, one would have expected an even greater number of migrants in the latter period. As households were the sample units, migrants not living in households were not included in the sample frame. These could be migrants living at construction sites, at other places of employment, in group quarters etc. In addition, some persons living in the sample households but who were

Table 1: Number of individual respondents, by expected and actual migration status

Expected status	Actual status		
	Migrant	Non-migrant	Total
Migrant	704	96	800
Non-migrant	0	200	200
Total	704	296	1,000

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

not considered to be household members, such as temporary visitors or persons who did not have a residence permit, may have been omitted from the survey. Thus, the survey methodology was likely to incorporate a disproportionate share of settled or established migrants and to omit more recent or temporary migrants.

Nearly all respondents were registered in some way in the city. Of the 342 migrants who arrived after 1989, 22 per cent had permanent residence permits, 63 per cent had temporary residence permits, 15 per cent did not have residence permits but had been registered by the local authorities, and one person had not registered in any way. This distribution no doubt reflects the sample design, which was biased towards usual members of households.

Population growth and migration in Ho Chi Minh City

The average annual growth rate of Ho Chi Minh City between the 1979 and 1989 censuses equalled 1.87 per cent. Between 1989 and 1994, however, the annual average was 3.5 per cent. During that time, the rate of natural increase in the city had been about 1.6 per cent, thus the contribution of net migration to the growth of the city equalled 1.9 per cent per year (table 2). According to the figures in table 2, some 43 per cent of the population growth of the city between 1989 and 1994 resulted from natural increase and 57 per cent from net migration.

The impression of a declining rate of migration to the city given by table 2 could be spurious. The migration rate is calculated as a simple residual by subtracting the rate of natural increase from the population growth rate. Any undercount of the total population would yield a lower estimate of net migration. If there has been a recent increase in the number of unregistered migrants to Ho Chi Minh City, both the estimate of the total population and of the migration rate could be biased downward.

Table 2: Population growth in Ho Chi Minh City, 1989-1994

	1989	1990	1991	1992	1993	1994
Population (thousands)	3,942	4,113	4,259	4,426	4,582	4,694
Percentage increase from previous year	5.77	4.34	3.55	3.92	3.52	2.44
Annual rate of natural increase (%)	1.53	1.52	1.61	1.61	1.58	1.57
Annual migration rate (%)	4.24	2.82	1.94	2.31	1.94	0.87

Source: Statistical Office of HCMC, *Statistical Yearbook*.

Spontaneous versus organized migration

Prior to 1986, most migration in Viet Nam was organized and sponsored by the Government. This took the form of allocation of workers for employment, the transfer of state employees and the movement of persons to rural resettlement areas, or new economic zones. Other forms of migration were restricted.

In 1986, the Sixth Party Congress adopted a policy of economic liberalization referred to as *doi moi* (renovation). A fundamental purpose of *doi moi* is to shift from a centrally planned economy based chiefly on public ownership of the means of production to a multi-sector economy operating under a market mechanism with state management and a socialist orientation. The reforms effected by the new policies have resulted in an upsurge of "spontaneous" migration, i.e. migration neither organized nor sponsored by the Government. Spontaneous migration has developed in both rural and urban areas.

Spontaneous migration to such large cities as Ho Chi Minh City was stimulated by newly created employment opportunities in the private sector, the possibility of self-employment, and a relaxation of regulations concerning residence permits. The situation in Viet Nam is similar to that in China, another country with an economy in transition. There are many parallels between the "floating population" in Chinese cities and spontaneous migrants in Viet Nam, primarily that they have been attracted by new economic opportunities and are not fully-registered residents of the cities. See, for example, Banister and Taylor (1989) and Goldstein and Goldstein (1985).

Household population

The distribution of the population residing in the 1,000 sampled households is presented in table 3, disaggregated by sex, age group and migration status. Females predominate in the survey population, especially among migrants. Females compose 51 per cent of the non-migrant population, 53 per cent of migrants during the period 1984-1989, and 55 per cent of the migrants who arrived in 1990 or later. While many females move to Ho Chi Minh City with their families, employment and schooling are important factors in attracting them to the city. As will be seen later, 58 per cent of the female migrants aged 13 years and older are in the labour force and another 15 per cent are students. Large numbers of women work in sales and manufacturing, and as family servants.

Table 3: Distribution of the sampled household population by age, sex and migration status

Age	Migration status								
	Non-migrants			Migrants					
				1984-1989			After 1989		
	M	F	Total	M	F	Total	M	F	Total
0-4	11.9	10.6	11.2	–	–	–	3.7	2.3	2.9
5-9	9.6	7.5	8.5	4.7	5.4	5.0	6.3	4.4	5.2
10-14	7.9	7.6	7.7	9.9	9.5	9.7	7.2	4.4	5.6
15-19	8.7	8.9	8.8	13.1	11.5	12.3	16.0	17.3	16.7
20-24	11.4	10.9	11.1	14.2	13.6	13.9	23.4	21.8	22.5
25-29	10.4	11.4	11.0	14.6	14.9	14.8	11.9	15.0	13.6
30-34	9.9	10.1	10.0	13.7	13.2	13.4	9.5	9.9	9.7
35-39	9.0	7.8	8.4	7.9	7.5	7.7	5.2	6.2	5.7
40-44	4.8	6.9	5.9	6.9	7.0	7.0	5.2	4.9	5.1
45-49	3.5	3.5	3.5	3.9	3.7	3.8	3.5	3.5	3.5
50-54	2.8	3.6	3.2	2.4	4.9	3.7	3.0	1.8	2.3
55-59	2.4	3.1	2.7	3.8	2.5	3.1	1.7	2.5	2.1
60-64	3.8	2.3	3.0	1.7	2.3	2.0	0.7	1.6	1.2
65+	4.0	5.8	5.0	3.2	4.0	3.6	2.8	4.6	3.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	1,789	1,853	3,642	534	598	1,132	462	568	1,030

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

Among the non-migrants in the surveyed households, there are similar proportions in each quinquennial age group up to age 39. Migrants, especially recent migrants, are much more concentrated in the young working ages of 15-29. Among migrants to the city between 1984 and 1989, 41 per cent were aged 15-29 at the time of the survey. Among migrants in 1990 and later, 53 per cent were aged 15-29, with 22.5 per cent in the single age group of 20-24 years. In contrast, only 31 per cent of non-migrants were in the age group 15-29.

The increasing concentration of migrants in the young working ages implies that family migration has declined in importance and that individual migration is becoming more prevalent, as would be expected from the shift from organized to spontaneous migration. That impression is reinforced when the age of migrants at the time of their move is examined (table 4). Among migrants during the period 1984-1989, 32 per cent were under age 15 and 41 per cent were aged 15-29 at the time of migration. Among the recent migrants, however, only 20 per cent were under age 15 and 52 per cent were aged 15-29.

Table 4: Percentage distribution of migrants by age at the time of move

Age group	Period of arrival	
	1984-1989	After 1989
0-14	32.1	19.7
15-29	41.0	52.0
30-49	19.4	19.8
50-64	5.8	5.6
65 +	1.6	2.8
Total	100.0	100.0
Number	1,132	1,030

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

Ho Chi Minh City attracts about one-third of its migrants from the Mekong River Delta (in the southern part of the country), with close to 20 per cent each also coming from the Red River Delta (where Hanoi is located) and the Central Coast. The decline in the proportion of migrants coming from the Red River Delta and the increase in the share from the Central Coast between the earlier and recent periods probably reflects a relative decline in official migration and an increase in individual and unofficial migration.

Table 6 gives the impression that migrants to Ho Chi Minh City have about one year more of general education than non-migrants. Some of the difference is explained by the different age structures of the migrants and non-migrants, however. Migrants are heavily concentrated in the ages 15-29,

Table 5: Percentage distribution of migrants to Ho Chi Minh City by region of origin

Region of origin	Period of arrival	
	1984-1989	After 1989
Northern Highlands	3.5	1.8
Red River Delta	22.0	18.3
North Central	7.2	8.5
Central Coast	15.2	19.3
Central Highlands	1.7	2.1
South-eastern Region	15.1	15.6
Mekong Delta	32.5	33.6
Overseas	2.8	0.6
Unknown	0.1	0.0
Total	100.0	100.0
Number	1,132	1,030

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

Table 6. Average number of years of general education of the sampled household population aged 5 years and above, by sex and migration status

Migration status	Average years of general education			
	Male	Number	Female	Number
Non-migrant	7.4	1,577	6.9	1,656
Migrant 1984-1989	8.6	534	7.5	598
Migrant after 1989	9.0	445	8.0	555
All respondents	8.0	2,556	7.2	2,809

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

where educational levels are highest, whereas more of the non-migrants are in the age groups 5-9 and 60 and older.

The fact that 53 per cent of recent migrants are aged 15-29, compared with 41 per cent of migrants between 1984 and 1989, probably explains why the more recent migrants have an average of half a year more of education.

Table 7 indicates that migrants and non-migrants are about equally likely to be economically active and that their unemployment rates are only marginally different. Among the household population in the survey, 67 per cent of non-migrants and 65 per cent of migrants aged 13 and older were in the labour force. The distribution by employment status of migrants who came to Ho Chi Minh City between 1984 and 1989 is very similar to that of non-migrants (table 7), suggesting that the earlier migrants comprise a greater proportion of organized migrants. The employment distribution of persons who migrated after 1989 reflects a greater share of spontaneous migration in that a significantly higher proportion of them are employed in the private sector. In addition, more recent female migrants are employed in "other categories", which include working as family servants.

About twice the proportion of migrants as non-migrants aged 13 and older are currently attending school, in spite of the older age distribution of the migrants. This implies that the pursuit of further education may be a reason for moving to Ho Chi Minh City.

Individual respondents

Detailed questions concerning their last move and their economic activity in Ho Chi Minh City were asked of the 704 migrants aged 15 and older who were chosen by selecting one randomly from each sample household containing at least one migrant. About 40 per cent of the individual

Table 7: Current activity status of the sampled household population aged 13 years and above, by migration status and sex

Activity status	Migration status								
	Non-migrants			1984-1989			After 1989		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Active population									
Employed by Government	23.6	26.4	24.9	29.2	26.0	27.6	22.1	16.6	19.3
Employed by private sector	22.8	12.5	18.0	23.3	13.8	18.8	32.5	25.6	28.9
Self employed	27.6	38.3	32.7	26.1	40.5	32.5	19.6	36.5	28.4
Employer	2.2	0.9	1.6	1.1	1.3	1.2	0.0	0.3	0.2
Other categories	18.5	18.2	18.3	16.6	12.8	14.8	18.6	17.7	17.9
Unemployed	5.3	3.7	4.5	3.7	5.6	4.5	7.1	3.7	5.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	974	869	1,843	356	308	664	280	301	581
Inactive population									
Attending school	15.2	26.3	22.1	58.3	33.0	40.0	73.9	35.3	48.5
Homemaker	2.0	43.2	27.6	0.0	39.1	28.0	1.8	41.92	8.2
Others	82.8	30.5	50.3	41.7	27.9	32.0	24.3	22.8	23.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	342	558	900	120	230	350	111	215	326

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

Table 8: Distribution of individual migrants by type of last residence, period of arrival and sex of respondent

Type of previous residence	Period of arrival					
	1984-1989			After 1989		
	Male	Female	Total	Male	Female	Total
Urban	40.0	39.1	39.5	44.6	36.8	39.8
Rural	60.0	60.9	60.5	55.4	63.2	60.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	155	207	362	130	212	342

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

migrants had moved from an urban area and 60 per cent from a rural area (table 8). These proportions are essentially the same for both periods of arrival and do not vary much by sex.

Whereas 54 per cent of the migrants in the household population were females, 60 per cent of the individual migrants were. It is possible that in selecting the migrant member of the household to be interviewed, there was some bias towards choosing a member at home when the interviewer called, thus selecting a disproportionate number of females. As in the household population, the proportion of females is greater among migrants who have arrived more recently. Among individual migrants during the period 1984-1989, 57 per cent were females, but among those arriving after 1989, 62 per cent were. Apparently employment opportunities in Ho Chi Minh City generated by economic liberalization have disproportionately favoured women.

Further evidence that recent migration has been stimulated in part by "renovation" policies is provided in table 9. The proportion of migrants who were single at the time of their move increased from 50 per cent for the period 1984-1989 to 59 per cent for the period after 1989. The increase in the proportion single was greater for female migrants than for male migrants.

For the great majority of migrants, their move to Ho Chi Minh City is the only move they have made since age 15. Seventy per cent had moved only once and another 22 per cent had moved only twice.

A majority of all migrants moved with their families, to join their families, for marriage, or to attend school, rather than primarily for economic reasons. Fifty-three per cent of males but only 32 per cent of females had moved for economic reasons.

Table 9: Distribution of individual migrants aged 13 years and above at the time of move, by marital status at time of move, period of arrival and sex of respondent

Marital status	Period of arrival					
	1984-1989			After 1989		
	Male	Female	Total	Male	Female	Total
Single	60.2	42.2	49.5	68.0	53.8	59.2
Married	36.8	49.0	44.0	30.5	39.5	36.1
Widowed	0.8	5.7	3.7	0.0	3.3	2.1
Divorced/separated	2.3	3.1	2.8	1.6	3.3	2.7
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	133	192	325	128	210	338

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

The greatest proportions of those moving for economic reasons were found among migrants from poorer regions of the country: the Central Highlands (53.9 per cent) and the North Central Region (51.0 per cent). Non-economic reasons were predominant among migrants from the Mekong River Delta (60.5 per cent) and the South-east Region (60.0), reflecting the importance of family networks for migration from these regions located near Ho Chi Minh City (table not shown).

Economic liberalization has not altered the proportion of male migrants moving for economic reasons, but among non-economic reasons migration to attend school has become more important while that for familial reasons has become less important (table 10). There was an equally large increase in the proportion of females who migrated to attend school after 1989. Of course, to the extent that migrant students return home following completion of their studies, migrants who arrived during the period 1984-1989 to attend school would not be captured by the survey.

Among female migrants, the proportion who moved for employment or income reasons increased significantly after 1989, apparently reflecting the impact of "renovation" policies on female employment generation.

Employment in Ho Chi Minh City

Only 54 per cent of the migrants to Ho Chi Minh City looked for work immediately after arriving, which is consistent with the fact that a majority had not moved primarily for economic reasons. While 61 per cent of male migrants sought work upon arrival, only 49 per cent of females did so (table

Table 10: Distribution of migrants, by main reason for migration, period of arrival and sex of respondent

Reason for migration	Period of arrival			
	Male		Female	
	1984-1989	After 1989	1984-1989	After 1989
Non-economic factors	**44.6**	**43.9**	**71.9**	**57.2**
Familial	29.7	18.5	56.0	33.5
Marital	3.9	3.1	11.1	7.6
Educational	10.3	22.3	4.8	16.0
Others	0.7	0.0	0.0	0.0
Economic factors	**54.1**	**53.1**	**24.6**	**36.7**
Living conditions	11.6	8.5	6.3	8.0
Employment & income	42.5	44.6	18.3	28.7
Others	**1.3**	**3.0**	**3.5**	**6.1**
Total	100.0	100.0	100.0	100.0
Number	155	130	207	212

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

not shown). The proportion of men looking for work declined from 64 per cent during the period 1984-1989 to 58 per cent after 1989, partially because more males moved for the purpose of attending school. The proportion of female migrants seeking work increased from 45 to 53 per cent between the two periods, which probably occurred because there were more spontaneous migrants in the latter period. Migrants from rural areas were much more likely (66 per cent) to look for work than those from urban areas (56 per cent).

More than 60 per cent of migrants to Ho Chi Minh City who looked for work upon arrival found a job in less than one month, and nearly 35 per cent found a job in their first week in the city (table 11). The survey would be biased to the extent that migrants who could not find a job within the first month returned home. Male and female migrants found employment about equally quickly. While there was little change in the time required by males to find employment between the period 1984-1989 and after 1989, among female migrants, those arriving after 1989 have been able to secure employment much more quickly than those arriving earlier. This is further evidence that economic liberalization policies have stimulated employment opportunities for women, mostly in light manufacturing, sales and services.

Migrants to Ho Chi Minh City during the period 1984-1989 have an occupational structure very similar to non-migrants, except that a greater proportion of migrants work in trade and sales, and fewer are agricultural

Table 11: Percentage distribution of migrants who looked for work, by amount of time spent finding their first job in Ho Chi Minh City, period of arrival and sex of respondent

Length of time spent finding first job	Period of arrival					
	Male			Female		
	1984-1989	After 1989	Total	1984-1989	After 1989	Total
Less than 1 week	33.3	35.5	34.3	26.6	42.0	34.9
1 week to 1 month	29.3	26.3	28.0	24.5	25.9	25.2
1 to 2 months	8.1	7.9	8.0	6.4	6.2	6.3
2 to 3 months	9.1	9.2	9.1	4.3	4.5	4.4
3 to 6 months	5.0	6.6	5.7	5.3	7.1	6.3
6 to 12 months	8.1	13.2	10.3	12.8	9.8	11.2
More than 12 months	7.0	1.3	4.6	19.1	4.5	11.2
Never found job	0.0	0.0	0.0	1.0	0.0	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	99	76	175	94	112	206

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

workers (table 12). The fact that the proportion of migrants between 1984 and 1989 who are professional, administrative and related workers is equal to that among non-migrants no doubt results from the transfer of large numbers of government officials to the city following reunification of the country in 1975.

The occupational structure has changed for migrants after 1989. Fewer of them are professional, administrative and related workers while more of them are manufacturing and construction workers. More recent migrants, especially women, are family servants. Among female migrants after 1989, 14 per cent of those working are family servants.

Table 13 confirms that the state sector is a major source of employment for migrants who arrived between 1984 and 1989. A greater proportion of those migrants work in the state sector than do non-migrants. Among migrants in the period 1984-1989 and non-migrants, equal proportions of working men and women were employed by the state sector.

As was observed for occupation, a shift in the sectoral structure of the labour force has occurred for migrants to Ho Chi Minh City after 1989. Smaller proportions of recent migrants are employed by the state sector or in their own family businesses. Considerably greater proportions than among earlier migrants are employed in the private sector (especially for males) and in other families' businesses (especially for females).

Table 12. Percentage distribution of employed respondents by main occupation, migration status and sex

Main occupation	Migration status								
	Non-migrants			1984-1989			After 1989		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Administrative, clerical and related	2.0	4.7	3.2	4.1	1.6	2.8	1.2	1.7	1.5
Professional & related	12.2	11.6	12.0	12.4	12.7	12.6	8.2	9.3	8.9
Construction & manufacturing	31.6	20.9	26.6	32.2	22.2	26.5	38.7	28.0	32.5
Agriculture	10.2	8.1	9.2	3.3	2.4	2.8	4.7	1.7	3.0
Transport, post & communications	11.2	0.0	4.3	9.1	0.0	4.5	7.1	0.9	3.5
Trade and sales	14.3	33.7	23.4	18.2	38.9	28.8	9.4	33.0	23.2
Restaurant & hotel	0.0	0.0	0.0	1.7	0.0	1.0	3.5	0.9	2.0
Services	11.2	9.3	10.9	7.4	13.5	10.5	12.8	7.6	9.9
Family servant	2.0	8.1	4.9	1.7	4.8	3.2	5.9	14.4	10.8
Others	7.1	3.5	5.4	9.9	4.0	6.9	8.2	2.5	4.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	98	86	184	122	126	248	85	118	203

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

Since 1989, considerably greater proportions of migrants have been employed by private sector enterprises in Ho Chi Minh City than was the case earlier. Making clothes for export is a labour-intensive enterprise that attracts single workers seeking economic opportunities.

Table 13: Percentage distribution of employed respondents, by economic sector of main occupation, migration status and sex of respondent

Economic sector	Migration status								
	Non-migrants			1984-1989			After 1989		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Own family business	41.8	54.7	47.8	36.9	57.1	47.2	23.5	34.8	30.1
Other's family business	10.2	8.1	9.2	6.6	5.6	6.1	15.3	20.3	18.2
Private sector	24.5	14.0	19.6	27.9	7.9	17.7	34.1	27.1	30.1
State-owned sector	21.4	22.1	21.7	27.0	27.0	27.0	22.4	16.1	18.7
Collective sector	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.5
Foreign-VN joint venture	2.0	1.2	1.6	1.6	2.4	2.0	2.4	1.7	2.0
Others	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	98	86	184	122	126	248	85	118	203

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

Table 14: Average number of hours worked per week in main occupation, by economic sector, migration status and sex of respondent

Economic sector	Migration status					
	Non-migrant		1984-1989		After 1989	
	M	F	M	F	M	F
Own family business	48.7	53.4	59.3	59.0	56.4	61.3
Other's family business	49.2	45.1	64.6	62.9	47.2	62.1
Private sector	57.9	56.2	56.9	56.6	56.5	57.0
State-owned sector	47.3	47.3	51.2	47.7	48.9	53.6
Collective sector	–	–	–	–	77.0	–
Foreign-VN joint venture	54.0	48.0	52.0	58.7	48.0	70.0
Others	–	–	–	–	60.0	–
Average	50.9	51.7	56.7	56.0	53.4	59.2
Number	86	71	122	126	85	118

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

Both migrants and non-migrants, males and females, work an average of 51 hours or more per week (table 14). Migrants work 4-5 hours per week more than non-migrants, with the discrepancy being greater among women workers. Among non-migrants and migrants during the period 1984-1989, males and females work approximately the same number of hours, but among migrants after 1989, females reported working six hours per week more than males. Employees in the state sector work the fewest hours per week while those working for other families' businesses and in the private sector work the most hours. As these data refer to main occupation, it is possible that many state sector employees have secondary occupations at which they work several more hours.

Among the employed individual respondents, the average monthly income for males is equivalent to US$55 and that for females is US$46 (table 15). Figures on income as reported by respondents may not be

Table 15: Average income of employed respondents age 15 and older, by migration status and sex of respondent

(Vietnamese Dong* per month)

Migration status	Male	Number	Female	Number
Non-migrants	524,200	98	459,900	86
Migrants 1984-1989	692,000	122	551,900	126
Migrants after 1989	482,900	85	431,600	118
Average/total	579,800	305	484,900	330

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

* *Note*: Values are net income per month in Vietnamese Dong. At the time of the survey, US$ 1 = VND 10,500.

Table 16: Average wage per hour worked, for employed respondents, by migration status and sex of respondent

Migration status	Average hourly wage (VND 1,000)			
	Male	Number	Female	Number
Non-migrants	2.4	83	2.3	71
Migrants 1984-1989	3.3	122	2.7	124
Migrants after 1989	2.5	84	2.1	117
Average/total	2.9	289	2.3	312

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

* *Note*: For employers and self-employed workers the values are net income per hour worked. Values are in 1,000 Vietnamese Dong. At the time of the survey, US$ 1 = VND 10,500.

reliable because of a tendency to conceal some income, so the reported figures should be taken as approximations. According to the reported incomes, migrants who arrived between 1984 and 1989 earn more than non-migrants, while migrants after 1989 earn less than either of the other groups. Note that in table 15, the incomes reported for non-migrants refer to persons who migrated to Ho Chi Minh City before 1984. The discrepancy between male and female incomes is greatest among migrants who moved between 1984 and 1989, and least among migrants after 1989.

Average wages per hour worked for employed respondents are presented in table 16. The patterns are very similar to those for reported income shown in table 15.

Contrary to public perceptions, the survey found that migrants are less likely to be employed in the informal sector than are non-migrants (table 17), although the sample bias towards more established migrants may have

Table 17: Percentage distribution of workers, by type of organization of main occupation, migration status and sex of respondent

Type of organization	Migration status								
	Non-migrants			1984-1989			After 1989		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Informal	62.7	64.8	63.8	52.4	60.5	56.5	54.8	60.7	57.8
Formal	37.3	35.2	36.2	47.6	39.5	43.5	45.2	39.3	42.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number	98	86	184	122	124	246	84	117	201

Source: Institute for Economic Research, Survey of Migration to Ho Chi Minh City, 1994.

affected this result. Among non-migrants, approximately the same proportion of males and females work in the informal sector, whereas among migrants significantly more women are in the informal sector.

Conclusion

Economic liberalization policies pursued by the Government of Viet Nam since 1986 have affected the nature of migration and employment in Ho Chi Minh City. Those policies have promoted the private sector, provided greater scope for self-employment and closed or reduced the size of loss-making state enterprises. Regulations concerning residence have also been relaxed so that many people may work in Ho Chi Minh City with temporary residence permits or by registering with local authorities but not obtaining a residence permit.

The scope of this survey conducted by the Institute for Economic Research did not permit an estimation of whether the rate of migration to Ho Chi Minh City is increasing, but it did indicate several impacts of the "renovation" policies on migration. The proportion of migrants coming from the Red River Delta has declined, reflecting a decrease in organized migration.

Migration flows to Ho Chi Minh City after 1989 are more concentrated in the ages 15-29 and are composed of a greater proportion of females than had been the case previously. More of the recent migrants are single, and more of them have moved to attend school. Among female migrants, there has been an increase in the proportion migrating for economic reasons.

There are several other indications that economic liberalization has had a greater impact on females than males. Recent female migrants have been more likely to seek employment and have found jobs much more quickly than earlier migrants. Recent female migrants are more likely than earlier migrants to work in manufacturing or in the private sector, and they appear to have narrowed the wage gap with men, although it remains considerable. Among both men and women, fewer migrants are employed in the informal sector than are non-migrants.

Although female migrants have benefitted from new economic policies, the gains have not always been easy. Female migrants work more hours for lower wages than do migrant men or non-migrant women.

It is hoped that the results of this survey will assist national and local-level planners to take into account demographic and social changes in preparing plans for social services and urban infrastructure in Ho Chi Minh City.

As females constituted 55 per cent of the recent migrants to the City in the survey, due attention should be paid to their situation, especially that of women workers, women heads of households and those in poverty. The survey also found that 54 per cent of recent female migrants were between the ages of 15 and 29. This prevalence of young women among migrants implies that local government should take special care to ensure that they have access to adequate health and social services, particularly those related to reproductive health, in order to avert potential problems among this vulnerable group of migrants.

Footnote

1. The survey was conducted as part of project VIE/93/P02 financed by the United Nations Population Fund (UNFPA). Under the same project, the Centre for Population and Human Resource Studies, Ministry of Labour, Invalids and Social Affairs conducted similar surveys in Dong Nai Province and the city of Vung Tau (Doan and Trinh, 1996).

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Recent Trends in International Migration and Economic Development in the South Pacific

Improved education and equal opportunity employment constitute the strongest basis for the socio-economic development of Pacific island countries

By Jean Louis Rallu*

The countries and territories of the South Pacific are often considered as not having population problems because of their relatively small size. But they actually face many population issues. For example, they still experience rapid natural population growth rates, which they try to reduce through international migration. Investigation of international migration in the South Pacific has long focused on Cook Islands, Niue, Tokelau, Wallis and Futuna

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Islands because these small island societies have a higher proportion of their populations living in New Zealand or in New Caledonia than at home.[1] Perhaps one of the main reasons for the interest in this form of migration is that it is well documented. By contrast, data on migration from Samoa and Tonga are poor even though the number of Samoans and Tongans overseas is much higher in absolute numbers than that of Cook Islanders, Niueans and Tokelauans.

This article attempts to estimate the size of the largest flows of migrants in the South Pacific, mainly from the Cook Islands, Fiji, Samoa and Tonga, since 1980. Because the 1980s and early 1990s witnessed important changes in the economic situation and migration policies of developed countries in the Pacific, the article also attempts to determine the consequences of those changes on migration trends, characteristics of migrants, age-structure of island populations and island economies. Finally, it considers whether or not migration will continue to play a role in the future demographic and economic development of Pacific island countries.

Migration

Owing to the poor quality of South Pacific migration data, it is necessary to use simultaneously migration statistics (arrivals and departures recorded by immigration services) and census data for both island countries and host countries.

Migration data

The migration data of Pacific island countries are particularly poor. For example, Tonga does not record departures of Tongan nationals, which means that migration data are simply non-existent for that country. A comparison of Samoan data on departures to Australia and American Samoa with Australian and American Samoan data on arrivals from Samoa shows that the former are highly unreliable. Fiji provides rather more reliable data; time series of departures from Fiji to Australia are consistent with arrivals in Australia. As for countries of the so-called "Pacific Rim", New Zealand data provide information only on citizenship since 1987 and the data are difficult to use for populations that include many persons holding dual nationality. Such persons are likely to go through immigration channels with one passport when they arrive and a different one when they leave the country. Australian data are available both by birthplace and citizenship. Data from the United States of America refer to immigrant permits by year, rather than to immigrants by year of entry (which is not the same for legalized migrants). Further, there are no data on departures.

Census data

Underenumeration of Pacific islanders in New Zealand censuses has been well assessed since the 1970s (Bedford, 1983); 1991 New Zealand census data show that the number of island-born Samoans and Tongans enumerated in 1991 who declared that they had already resided in New Zealand in 1986 is higher than the number enumerated in 1986 by 20 per cent for Samoans and by over 70 per cent for Tongans, at ages 20-24 years. It is not probable that the migrants exaggerated how long they had been in-country as a mean of justifying their status. In New Zealand, most illegal immigrants are overstayers whose passports were stamped on arrival; therefore, the date of their entry is known. The only way for illegals to become legal migrants is to regularize their situation, as had occurred in 1988 and 1989. Most of the overstayers who entered the country prior to 1988 should therefore have had their status regularized; those whose status was not regularized most probably escaped enumeration in the 1991 census.

A comparison of net migration with intercensal changes in the population of Pacific islanders in Australia also shows underenumeration, mainly for Samoans, with 5,800 persons enumerated against 8,600 expected based on the figure in 1986 and net migration during the period 1986-1991. Underenumeration of Pacific islanders affects United States censuses as well. According to the 1990 census, there was a decline of 1,000 persons since 1980 in the number of foreign-born Samoans living in the United States compared with an inflow of 2,743 immigrants during the period 1980-1989. Data are apparently more consistent for Tongans for whom there was an intercensal increase of 5,500 against 5,442 immigrants recorded in 1990. But these figures do not include the IRCA (Immigration Reform and Control Act of 1986) adjustment of 827 Samoans and 3,522 Tongans (Ahlburg, 1991), and illegals not yet regularized. There are no data on outmigration from the United States, but it probably is not significant.

Underenumeration of Samoans and Tongans in the 1990 census certainly occurred, but it might have been slightly smaller than suggested by the aforementioned figures. The censuses of island countries are not always reliable. For example, it has been acknowledged that Samoa's 1986 census was not complete, even though *matais* (chiefs of extended families) acted as enumerators (after teachers refused to do so because of the wages offered for the work). Further, Fijian and Tongan censuses provide information only every tenth year, an intercensal period which is too long for making a useful study of migration.

Migration in the Pacific subregion does not include large numbers of illegal arrivals such as would be the case in Europe and the United States. However, although the number of stow-aways is normally small, illegal entry still occurs; for example, illegal entry to Australia from Papua New Guinea through the Torres Strait might be more frequent that elsewhere in the subregion. Australian and New Zealand data show that since 1980 most of the net migration consists of short-term movements and this has been an increasing trend since 1986. An exception was Fijian migrants of ethnic Indian origin who from 1988 migrated to Australia and New Zealand mainly with long-term visas. In 1987, a coup d'état in Fiji resulted not only in a sudden change of government administration but also of policy towards this ethnic group. Thereafter, most Fijians of Indian origin entered the aforementioned countries with short-term visas (Rallu, 1994). Thus, illegal migrants in Australia and New Zealand are mainly overstayers whose arrivals had been recorded. The main pattern of illegal migration of islanders appears to be: arrive with a short-term visa, overstay, avoid enumeration by not answering the census questionnaire, later regularize one's status, and answer the census questionnaire.

Size of flows in the 1980s

Total migration from island countries and territories has been estimated using migration data or census data of countries of the Pacific Rim (table 1). Almost 18,000 Tongans would have left Tonga in the 1980s, which represents an annual net loss rate of 1.9 per cent. As departures were concentrated in the second half of the 1980s, net losses were higher than the natural growth rate of 2.2 per cent, thus, population declined in Tonga during this period.[2] Fiji shows the highest number of migrants, i.e. 50,000 or more according to available sources of data, but for the decade the annual net loss rate to Fiji was only 0.7 per cent. However, the rate exceeded 1 per cent during the second half of the 1980s; it was even higher for the Indian population of Fiji which declined from 349,000 at the end of 1986 to 338,000 in mid-1989, stabilizing thereafter.

Results for Samoa give two rather different estimates, i.e. a net loss of 16,000, or 23,500 for the 1986-1991 period, depending on whether census or migration data, respectively, are used. Given the level of natural growth in Samoa, the increase in the "Samoan" population from 156,000 in 1986 to 158,100 in 1991 would allow for emigration of only 18,400 persons during the period. Thus, the figure of a net loss of 23,500 means that the population growth rate would have to have declined, or it implies that the 1986 census of Samoa would have to have underenumerated the population by about 5,000 persons, with no increase in the population occurring

Table 1: Changes in island-born populations of Pacific Rim countries in the 1980s

Destination	Places of origin			
	Cook Islands	Fiji	Samoa	Tonga
American Samoa				
1986-1991				
Census	–	–	5,030	510
Australia				
1981-1986				
Census	820	5,394	2,200	1,856
Immigration	–127	8,078	2,280	2,300
1986-1991				
Census	850	15,350	2,800	1,730
Immigration	875	18,220	5,380	2,110
New Zealand				
1981-1986				
Census	1,830	870	9,950	1,990
Immigration[1]	–	1,695	9,290	1,520
1986-1991				
Census	–270	9,470	9,250	5,850
Immigration	–	11,375	11,400	5,620
United States (USA) and Canada				
1980-1990				
Census (USA)	–	8,400	–1,000	5,500
Immigration (USA)	–	9,209	2,743	5,442
Census (Canada)	–	10,350	–	–
Totals for places of origin				
1980s				
Census	3,230	49,834	28,230	17,436
Immigration	–	58,118	32,380	17,560
1986-1991				
Census	580	–	16,080[2]	–
Immigration	–	–	23,471[3]	–

Notes:
1. New Zealand migration data are by citizenship.
2. Assumes that the decline in the United States was between 1986 and 1990.
3. With 1,661 immigrants in the United States during the period 1986-1990 (fiscal years).

between 1986 and 1991. If underenumeration at the 1991 census was actually fewer than 5,000 persons, then the population of Samoa would have declined too. Cook Islands experienced a small level of emigration owing to the economic situation in New Zealand, and noted a return migration of 700 persons. The population in the islands increased by 1 per cent yearly, according to census data of 1986 and 1991 which are consistent with the rate of natural increase and net migration.

Recent trends in migration

Despite the economic recession in New Zealand and Australia during the second half of the 1980s, it appears that migration from Polynesian countries did not decline significantly for the period as a whole, but changes in migration policies had an important effect on the timing of migration. The visa waiver experiment from December 1986 to March 1987 in New Zealand caused mass arrivals, primarily of Samoans and secondarily of Tongans and Fijians. Then restrictive migration policies resulted in a decline in Samoan migration to New Zealand, followed by peaks in their migration to Australia in 1988 and American Samoa during the period 1989-1990. Since 1990, there has been a net loss of Samoan citizens in New Zealand, but this situation probably does not reflect migration trends only, as the number of migrants with dual nationality was increasing and the way they use either of their passports may change. Except for a drop in 1991, net gains in the number of Samoans migrating to Australia were rather steady during the period 1989-1993, but they comprised mainly New Zealand citizens. Tongan migration to New Zealand and the United States increased significantly during the second half of the 1980s, but net losses have appeared in New Zealand since 1990 and a slight decline has occurred in their migration to Australia since 1989. The second half of the 1980s also witnessed important levels of emigration of Fijians of Indian descent following the political uncertainties in that country during 1987; however, emigration of ethnic Fijians also increased. The trends reversed since 1989; according to Fijian data, emigration of Fijians of Indian descent as well as ethnic Fijians has been declining, as has been the case with other islanders.

From the viewpoint of Pacific Rim countries, migration from the South Pacific to Australia increased during the period 1986-1991 mainly owing to migration from Fiji and secondarily from Samoa (table 1). The Trans-Tasman Agreement between New Zealand and Australia allows free movement of residents between the two countries. Data by citizenship show that 62 per cent of Samoa-born migrants arriving in Australia are New Zealand citizens whereas the figures are only 20 per cent for Tonga-born migrants and 7 per cent for the Fiji-born migrants. In 1991, the net migration of island citizens was negative for Samoans and Tongans.

For New Zealand, immigration from Fiji became as important as that from Samoa during the period 1986-1991, a time when Tongan migration also increased. Migration from Fiji and Tonga to the United States has increased. A noticeable point is the increase in Samoan gains in American Samoa. This could be related partly to the longer procedures required to enter the United States, but arrivals in American Samoa actually increased

as a result of the difficulties Samoans faced in entering Australia and New Zealand.

Migration in the South Pacific during the 1980s has retained one of its main characteristics of very low migration from western Melanesia and Kiribati (although Micronesian island territories affiliated with the United States experienced high rates of emigration) and significant migration from the Central and Eastern Pacific. With more and more islanders taking advantage of the Trans-Tasman Agreement by migrating from New Zealand to Australia or leaving directly for Australia and the United States, an extension of migration networks, beyond specific links to former colonial powers, appears to have developed towards the "general circulation" of people (Chapman, 1985). Although Melanesian migration has so far remained insignificant, a big change for the future of migration in the South Pacific will be the beginning of significant migration flows from Melanesia, prompted by the pressures of unemployed youths and urbanization. The number of such migrants could be considerable owing to the size of the populations in Papua New Guinea and Solomon Islands.

Characteristics of migrants

Participation and unemployment rates

Censuses provide detailed information on the employment status of migrants. However, under-enumeration probably affects migrants differently according to employment status and occupation. Those who escape the census are mainly overstayers who were not yet able to regularize their status, i.e. mainly persons not in the labour force, unemployed or in lower level occupational groups.

Nevertheless, changes in labour-force participation have been extremely rapid, reaching very high rates of non-participation and unemployment in Australia and New Zealand in 1991. In New Zealand, the proportion of persons aged 20-49 not in the labour force increased from 7 per cent to 25 per cent for island-born males who already resided in New Zealand in 1986. Increases were relatively smaller for females, but the levels were higher, i.e. increasing from about 35 per cent in 1986 to between 45 per cent and 50 per cent in 1991. Unemployment rates also increased steeply from about 7 per cent to 20 per cent or more for males during the period 1986-1991 (table 2); the increase for females was from 13 per cent to 17 per cent. It may be observed that levels of non-participation in the labour force and unemployment rates are about 3-5 percentage points higher for migrants who were not residing in New Zealand in 1986 (recent migrants). Thus, the proportion of males aged 20-49 years currently employed declined

Table 2: Unemployment rates of Pacific islanders overseas

	Island-born				New Zealand-born		
	Cook Islanders	Fijians**	Samoans	Tongans	Cook Islanders	Samoans	Tongans
Australia*							
1986							
Males	16.7	10.5	17.9	17.2			
Females	28.9	13.0	21.9	21.5			
1991							
Males	26.2	14.7	32.0	23.8			
Females	29.8	18.2	33.1	26.0			
New Zealand							
1986 (ages 20-49)							
Males	5.9		7.0	9.1	8.8	8.2	7.8
Females	12.9		11.9	14.3	15.6	9.5	8.3
1991 (ages 20-49)							
Males	20.0	12.7	20.0	22.0	20.4	19.0	16.7
Females	17.4	16.5	16.7	18.5	20.3	18.5	17.3

	Foreign-born			Native Samoans
	Melanesians	Samoans	Tongans	
United States				
1980				
Males	5.2	9.6	7.9	9.0
Females	2.3	9.8	4.3	10.7
1990				
Males	7.4	8.8	9.5	9.6
Females	6.1	9.8	10.8	11.2

Notes: * For Australia, data are by place of birth; and
** Data for Fiji include Fijians of Indian descent.

from 85 per cent in 1986 to 59 per cent in 1991 for migrants who had already resided in New Zealand in 1986; for females in the same age group, the proportion declined from 56 per cent to 43 per cent. The proportions employed were only 48 per cent and 34 per cent, respectively, for recent male and female migrants. New Zealand-born Pacific islanders adjusted much better than the island-born to the new labour market situation, with only 35 per cent of males and 49 per cent of females not being employed.

In Australia,[3] unemployment rates among Pacific islanders reached similar or even higher levels in 1991 than in New Zealand, with around 25 per cent each of the male island-born Tongans and Cook Islanders being unemployed, and 32 per cent of the male island-born Samoans; the respective data for females are 26 per cent, 30 per cent and 33 per cent unemployed. However, it should be mentioned that unemployment rates of

Pacific islanders were already high in 1986, i.e. around 17 per cent for males and 22 per cent for females.

In the United States, increases in the unemployment rates in 1990 for Pacific islanders had been moderate, generally remaining under 10 per cent, with only small differences observed between native and foreign-born. However, native Samoans (including American Samoans born in American Samoa) have not performed as well as foreign-born Samoans (all of these being Western Samoans) who were selected by immigration.

In the second half of the 1980s, a significant decline occurred in the Samoan-born labour force employed in New Zealand, which was not compensated for by increases in Australia and the United States, given the probable levels of underenumeration. The Samoan-born labour force overseas increased only as a result of increases in American Samoa. The Tongan-born labour force overseas increased in all countries of the Pacific Rim, owing to significant emigration during the period 1986-1991. Also, there was a decline in the overseas labour force of Cook Islanders.

Occupational distribution

The steep declines in the labour force employed in New Zealand were a result of economic restructuring, with automation replacing unskilled labour. Pacific islanders were particularly affected by these changes as most of them (around 80 per cent) had been employed as labourers at the beginning of the 1980s. The restructuring of the New Zealand labour force witnessed an increasing proportion of persons employed in higher occupational categories. The Pacific islanders who were still employed in 1991, followed this trend. There was an even slightly higher relative increase in the number of managerial, administrative, professional and technical employees among island-born than New Zealand-born Pacific islanders. Nevertheless, the proportion of island-born employees in these occupational categories at around 9 per cent in 1991 remained much lower than that of New Zealand-born Pacific islanders at almost 30 per cent for Tongan and Samoan males (table 3). The proportion of clerks was stable for males but increased for island-born females, whereas the proportion of production workers and sales and service workers declined steeply. Some of the sales and service workers might have taken higher level jobs, but most of the production workers became unemployed. Nevertheless, it is worth noting that migrants took action in line with the restructuring of the New Zealand economy with some of them attaining high-level occupations. However, as late as 1991, 75-80 per cent of the island-born population still comprised production workers. With regard to occupational distribution, islander

Table 3: Occupational distribution of Pacific islanders in Australia, New Zealand and the United States

Occupation	Island-born								New Zealand-born					
	Cook Islanders		Fijians**		Samoans		Tongans		Cook Islanders		Samoans		Tongans	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Australia*														
1986														
MPPTA	8	12	29	23	24	25	9	17						
Clerks	5	15	8	30	6	23	2	13						
Sales/services	4	13	7	16	5	12	2	8						
Production workers	79	59	53	28	62	38	82	58						
1991														
MPPTA	5	11	27	20	9	16	9	16						
Clerks	4	16	8	26	4	17	3	15						
Sales/services	3	12	7	16	3	13	2	9						
Production workers	77	51	50	30	72	42	74	46						
New Zealand														
1986														
MPPTA	3	6			4	7	4	8	7	10	13	15	18	16
Clerks	4	13			6	15	3	10	7	35	13	46	6	38
Sales/services	6	31			7	29	7	28	12	21	17	20	16	28
Production workers	83	47			79	45	82	50	73	32	56	18	58	17
1991														
MPPTA	10	13	26	22	9	13	8	12	20	24	28	30	31	31
Clerks	4	17	6	31	6	19	3	13	7	35	13	43	8	36
Sales/services	5	19	14	26	6	18	4	19	7	12	13	12	11	14
Production workers	79	48	48	17	74	45	82	52	63	27	45	12	46	16

	Foreign-born						Native					
	Melanesians		Samoans		Tongans		Melanesians		Samoans		Tongans	
	M	F	M	F	M	F	M	F	M	F	M	F
United States												
1980												
Managers and professionals	12	11	12	13	11	11			12	14		
Tech/sales	10	5	6	10	6	9			5	15		
Adm. supply clerks	10	16	9	26	5	23			13	30		
Service workers	20	41	17	24	22	33			18	22		
Farm/fisheries workers	4		3		10				3			
Production workers	43	24	53	26	45	24			50	19		
1990												
Managers and professionals	12	10	15	13	8	8	35	11	13	14	16	22
Tech/sales	12	16	7	18	3	10	0	13	8	16	8	17
Adm. supply clerks	6	27	11	29	5	22	9	22	11	36	13	26
Service workers	25	31	17	28	18	37	45	49	19	19	23	25
Farm/fisheries workers	3		3		17		0		2		4	
Production workers	42	16	48	13	49	22	12	5	48	15	37	10

Notes: * For Australia, data are by birth place; and

** Data for Fiji includes Fijians of Indian descent. Totals do not add to 100 owing to number "not stated".

Abbreviations: MPPTA = managers, professionals, para-professionals, technicians and administrative staff.

migrants remain well behind all European New Zealanders, New Zealand Maoris (although New Zealand-born islanders are doing better than the latter group) and South-East Asian migrants (26 per cent of ethnic South-East Asian migrants works as managers, administrators, professionals or technicians compared with 10 per cent of ethnic Pacific islanders). It will be more and more difficult for Pacific islander migrants to compete for jobs with the better educated Asian migrants.

In Australia, the proportions of islanders who are working in both higher level occupations and production are not much different from those in New Zealand. But in contrast to New Zealand, no important change towards higher level occupations occurred in Australia. On the contrary, for most islanders, the proportions of managers, professionals, technicians and administrative workers were lower in 1991 than in 1986; as for production workers, there has been no clear trend. Analysis of migration data to determine the occupation of migrants shows that long-term migrant islanders who hold New Zealand citizenship and have free access to Australia had lower level occupations than island citizens who were selected by immigration (Rallu, 1994). The decline in the proportion of islanders in higher occupations in Australia also reflects an increasing level of short-term migration which escapes selection with the migrants taking lower level occupations.

Occupational classification in the United States is different from that of Australia and New Zealand. In the United States, the proportions in managerial and professional occupations in 1990 reached 15 per cent for foreign-born Samoan males and 12 per cent for Melanesians but only 8 per cent for Tongans. Except for Melanesians, these levels were higher than in Australia and New Zealand, despite the fact that these categories are more restrictive in the United States. Craft workers, precision workers, operators, fabricators and labourers, categories comparable to production workers in Australia and New Zealand, account for less than 50 per cent of Pacific island employees in the United States, a much smaller proportion than in Australia and New Zealand. Seventeen per cent of Tongans in the United States are classified as agricultural and fishery workers.[4] In contrast to New Zealand, a change in the occupational distribution of Pacific islanders in the United States between 1980 and 1990 was towards more production workers, especially for Tongans. The proportion of technicians, sales staff and administrative support workers in the United States declined steeply for Tongans and Samoans in 1990 as did the proportion of service workers among Tongans. For Melanesians in the United States there were only minor changes in occupational distribution. Data on native Samoans in the United States include American Samoans born in American Samoa, which

might be the reason why native Samoans do not perform much differently from foreign-born Samoans, whereas in New Zealand they do.[5]

In general, skilled Pacific islanders prefer to migrate to the United States, which partly explains the high proportions of islander production workers in New Zealand and Australia. However, the proportion of islander production workers in the United States increased for Tongans who in recent years have stepped up immigration to that country.

Return migration and employment

Increasing difficulties for Pacific islanders to find jobs in host countries of the South Pacific subregion should result in an increasing level of return migration.

Return migration

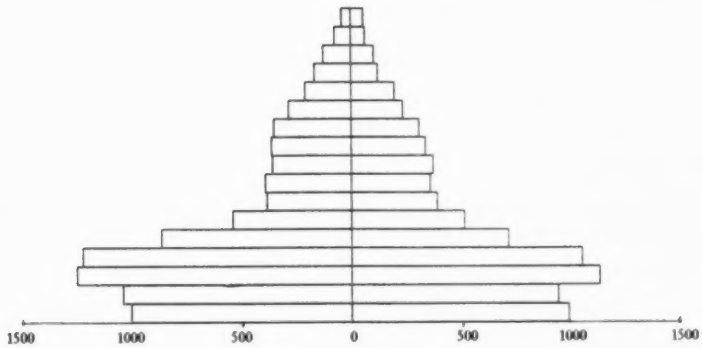
No data on return migration are available for the 1970s or early 1980s; however, data for the mid-1980s and early 1990s do not show significant return migration.

Return migrants have been defined as island-born persons enumerated in island countries who reported that they resided overseas when questioned about their previous residence. Return migration rates have been calculated as the ratio of return migrants to the island-born population enumerated (or estimated) in Pacific Rim countries at the date referenced in the question on previous residence (table 4). In 1986, rates of return migration were about 10 per cent in Fiji and Tonga. However, after 1986 emigration increased and net losses became even more important in these countries (see table 1) yielding further potential for return migration. In the early 1990s, the proportion of return migrants was around 5 per cent in the Cook Islands and American Samoa.[6] Both societies experienced mass migration to countries to which their citizens have free access, and this is probably the reason why rates of return migration are lower in the latter than in Fiji and Tonga.

Despite the low rates, return migration to the Cook Islands – simultaneously with lower emigration – has had a significant impact on population trends and age-structure. It should be noted that estimates of departures from New Zealand are twice as high as return migrants enumerated in the islands, which means that one out of two migrants who left New Zealand went to Australia or the United States. This situation is worth further study as it may affect Samoa and Tonga in the near future.

Figure 1: Age pyramids of the population of the Cook Islands, 1986 and 1991

Cook Islands, 1986



Cook Islands, 1991

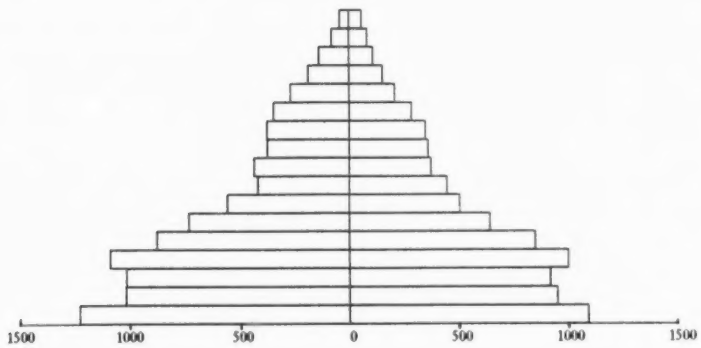


Table 4: Rates of return migration and proportion of return migrants in island populations for countries and territories of the South Pacific, 1986-1991

Country/ territory	Census year	Date of previous residence	Return migrants	Island-born population in Pacific Rim countries and territories[1]	Return migration rate (%)	Proportion of return migrants[2]
American Samoa	1990	1985	720	18,000	<4.0[4]	1.5
Cook Islands	1991	1986	858	17,800	4.8	5.2
Fiji	1986	1981	2,369	23,500	10.1	0.3
Tonga[3]	1986	1982	1,722	18,800	9.2	1.8

Notes: 1. Island-born (or ethnic Tongans) enumerated or estimated in Australia, New Zealand and the United States at the date of previous residence.
2. In island population.
3. Ethnic Tongans.
4. Estimated.

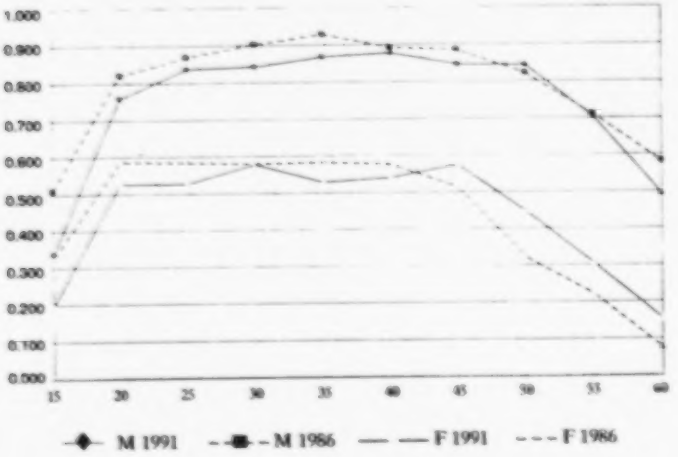
The shape of age-pyramids in island countries and territories has been affected by emigration as can be seen by the marked bottle-neck from ages 20-25 (figure 1). This aspect was very typical in the Cook Islands in 1986. Reduced net losses during the five years preceding the 1991 census caused increases in the population aged 20-24 and 25-29, and return migration also appears after age 30. Actually, 67 per cent of the return migrants were aged 20-49, with a rather even distribution between these ages. As a consequence, the proportion of adults increased from 54.6 per cent in 1986 to 57 per cent in 1991. Despite higher numbers of births in 1991 owing to the increasing number of women entering the reproductive age groups, the proportion of children under 15 years of age declined from 38.4 per cent to 35.5 per cent. Age-dependency ratios also declined from 0.833 to 0.754.

Employment

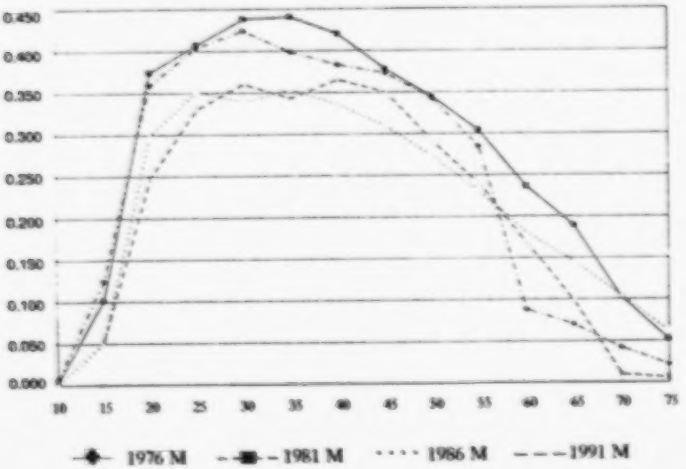
The re-shaping of the age-pyramid and decline in age dependency should have positive effects on island economies and overall development, provided the increasing number of adults can find jobs. According to the 1991 census of the Cook Islands, most return migrants in Rarotonga, the main island where the formal sector is more developed than in outer islands, were employed, with the rates of employment being 80 per cent for males and 63 per cent for females. However, these figures were 10 percentage points below the employment rates for the total population. Moreover, despite the Cook Islands having had a rather dynamic economy during the second half of the 1980s compared with other South Pacific island countries, the ratio of the population employed (by age) to the total

Figure 2: Employment rates in the Cook Islands and Samoa in the 1980s

Cook Islands, ratio of the employed population to the total population by age



Samoa, ratio of the population employed in the formal sector to total population



population (figure 2) declined from 1986 to 1991, mainly at ages under 35 for both males and females.[7] A similar trend was seen in Samoa throughout the 1980s with regard to the population employed in the formal sector. Under such conditions, the favourable impact that a reduced level of migration is supposed to have on an economy becomes highly questionable.

Island development

The relationship between migration and development needs to be re-conceptualized somewhat, at least for South Pacific island countries. Migration increased steeply after Samoa attained independence in 1962 and it started after Tonga attained independence in 1970. This phenomenon appeared to be a consequence of poor employment opportunities in the islands following independence, with no new jobs being created. The historic cause of mass migration from island countries and territories and the recent difficulties island economies have had in providing jobs for a slowly growing working-age population would seem to support the view of those saying that migrants can find in Pacific Rim countries the jobs they cannot find in their islands and that migration is well compensated for by remittances. Therefore, a lower level of migration would have rather negative effects on island economies and their way of life. How much is this still true?

Monetary flows from external sources

In the 1960s and 1970s, Polynesian countries developed economies based on external sources of money, remittances and aid, often referred to by the acronym MIRAB (migration, remittances, aid and bureaucracy) (Bertram and Watters, 1985). Remittances and ODA (official development assistance) represent a high proportion of GDP (gross domestic product) (table 5). Remittances in kind (either new or used goods) and unrecorded remittances represented up to 57 per cent of total remittances in 1993 (Brown, 1994) and this proportion might have increased recently owing to high unemployment rates among migrants and their difficulty in sending money home. Under these conditions, using published data, it is not easy to measure the impact of overseas unemployment on remittances. As a consequence of a still growing labour force employed overseas,[8] remittances had been increasing in Samoa until 1991 (latest available data). Remittances increased in Tonga from T$30 million (1 pa'anga (T$) = US$0.69 in 1987 and US$0.80 from 1988 to 1991) during the period 1987/88-1988/89 to T$38 million for the period 1989/90-1991/92; however, they declined slightly during the latter period, i.e. from T$39.6 million in 1989/90 to T$38.5 million in 1991/92 (SPC, 1993).

Table 5: Economic indicators of Pacific island countries and territories, 1990

(US$)

	GDP (per capita)	Percentage of annual GDP growth (1986-1990)	Remittances (% of GDP in 1989)	ODA (per capita in 1989)	Balance of trade (millions of US$)	Budgetary deficit (millions of US$)
Cook Islands	3,416			730	–46	
Fiji	1,767	2.3	*	64	–254	35
Samoa	750	0.6	36	210	–81	22
Tonga	1,038	0.5	33	287	–51	28

Source: South Pacific Commission (1993), ESCAP (1993).

* *Note*: In Fiji, net private remittances are negative.

In the near future, the labour market in countries of the Pacific Rim will not become more favourable for Pacific islanders and negative net migration of Samoans and Tongans in New Zealand will not always be compensated for by migration to American Samoa and the United States. Eventually remittances will level off, or even decline. International aid is also likely to decline as a result of the end of the Cold War and "donor fatigue", among other factors (Australian Minister of External Aid and Pacific Islands Affairs in a Conference at the University of New South Wales, September 1994). Also, Pacific island countries have already received very high levels of aid per capita (table 5). Considered together, both remittances and external aid are likely to stabilize or decline.

External solutions

For historical reasons dating back to the arrival of Europeans in the subregion, island people – not to mention Governments – would seem to be under the impression that development comes from abroad, so they still tend to depend on external sources of aid. In the face of high unemployment rates overseas, some countries have embarked on steps that will increase the "brain drain"; the thinking is that professionals who emigrate are less likely to be unemployed in host countries and persons of such calibre should be able to send home significant amounts of money. Samoa's Seventh Development Plan contains a section dealing with "human capital exportation". Recognizing that labourers have increasing difficulties in finding jobs overseas, the Plan states that it is possible "to embark on a conscious policy of exporting skilled labour in order to ensure a continuing flow of remittances".[9] This attitude is not sustainable as it does not take into account the negative aspects of the brain drain at home, i.e. the necessity

either to employ costly expatriates to replace professionals who migrate, or leave positions in the public sector vacant or occupied by underqualified staff. Nor is it consistent with the bonds placed on government-supported students to repay grants, unless there are provisions that such students educated overseas would have to work in the islands for a few years before migrating. As for producing highly qualified professionals or technicians in small island countries, this would not seem possible because of their severe resource constraints and limited opportunities for such high-level training. Actually several Governments of countries in the subregion do not seem really concerned about the brain drain, since it is seen as part of a more basic economic process based on monetary inflows from overseas. There are other dimensions to the problem as well. For example, Fiji would seem to place ethno-political considerations before the negative effects of the brain drain. Witness the extremely high brain drain that occurred during the period 1987-1991, with about 50 per cent of managers and 15 per cent of professionals, technical, clerical and related workers, mainly Indians, emigrating (Chetty and Prasad, 1993). To replace those lost in that brain drain, Fiji has been attempting to attract Asian migrants in the expectation that they would bring in valuable skills, make investments and generate new jobs for local people.

Another way for Pacific island countries to increase the level of remittances would be to send out more migrants in the future, which would imply fostering higher fertility. Since the mid-1980s, fertility in most island countries has been either relatively stable or on the increase, with total fertility rates being around 4.5 children per woman, thus delaying the completion of the fertility transition. Such fertility might also be a compensation for emigration. However, it is noticeable that societies such as American Samoa and the French Overseas Territories, which have different economies, still show declining fertility.

Such solutions are based on mass migration (or transmigration) and presuppose that migration would be free between island countries and countries of the Pacific Rim. There is a strong misunderstanding of the situation by Governments of island countries. It is true that migration might not have the same negative effect on development in situations where economies are profoundly inter-related as is already the case in the Pacific, with important flows of goods and remittances. However, a recent problem, which would occur whenever migration becomes free, is that of integration of migrants on the labour markets of Pacific Rim countries. The reasons why islanders cannot compete with other migrants from South Asia or South-East Asia have their roots in the island societies themselves.

Socio-political causes of economic difficulties

The main problem appears to be the educational system in island countries, which at face value would seem to be a controversial statement since the Pacific islands enjoy high literacy dating back at least to the end of the Second World War if not to the beginning of this century owing to the efforts of mission schools. However, in the 1970s and 1980s, the educational systems in the Pacific islands did not follow the trends in Asia. As a result, students in the Pacific complete secondary-level courses with lower achievement in mathematics and the sciences, sometimes also in English; moreover, because of the quality of such preparatory courses, they have difficulties in coping with the advanced level of studies found at overseas universities and at the University of the South Pacific in Suva, Fiji. Further, the public school system is not very strong in Fiji; only one school is considered to be of an international standard. Private schools, many of them religious, are often weaker still, with a student's success often strongly related to various non-academic considerations. By contrast, in Fiji, Indian schools are considered better than public and private schools.[10] In Samoa and Tonga, more needs to be done to upgrade teaching materials and attract qualified staff for both public and private schools. In Samoa, only 2 per cent of children who entered form 2 in 1979 passed the school certificate level in 1982 and only 1.5 per cent of the same cohort subsequently passed the university entrance examination (Gannicott, 1993). In Tonga, between 20 per cent and 40 per cent of school children are taught to the required standard of primary education (Gannicott, 1993).

Except for the University of the South Pacific, post-secondary education institutions in island countries are weak: "Many of these institutions barely reach international secondary (school) standards" (Hughes and others, 1990). It remains to be seen whether or not island countries can afford local tertiary education, the per unit costs of which are already very high owing to the small size of the national populations in the Pacific. Rather than spend money on setting up local tertiary educational facilities that would face extreme difficulties in attaining a high standard, it would be wiser for Pacific island countries to upgrade their primary and secondary schools to enable more graduates to pursue courses overseas. Actually, most of the Cook Islanders who pursue tertiary education do so in Australia, Japan and New Zealand, where selection is competitive. As a result, the Cook Islands is considered to have better qualified civil servants than those of many other island countries and territories.

In general, it appears that most of the difficulties with educational systems can be traced to familial, social and political structures. Another

factor that is acknowledged as hindering social and economic development in Pacific island countries is their political and administrative systems. Some are dominated by noble families and chiefs or aristocrats and religious groups on one hand, or by certain ethnic groups on the other.

Maintaining the island way of life

Economic growth in Pacific island countries during the 1980s has been limited, with the overall growth in GDP per capita being about 0.1 per cent annually (UNDP, 1994). In Fiji, after virtually no growth until 1986, GDP declined following the events of 1987; a substantial recovery occurred in 1989 (11 per cent) but the overall result for the 1980s was an annual growth rate of 0.8 per cent in GDP per capita. During the period 1991-1993, yearly growth was around 0.3 per cent. GDP per capita based on published population figures for Samoa and Tonga should be corrected for population decline (see above) and should be around 0.5 per cent during the period 1985-1990, which is extremely low compared with island countries in the Indian Ocean (2.4 per cent) or Caribbean (3.7 per cent) (UNDP, 1994) where external aid per capita is much lower. However, it must be recognized that the remoteness factor and transport costs are higher in the Pacific.

Thus, recent economic performance is threatening the island way of life. Urgent restructuring of island economies is necessary. In view of the limited size and fragile environment of island countries, economic development should be oriented towards human resources, by bringing up to a high standard the qualifications of national populations. With the availability of new technologies, developing countries have a new opportunity to progress. Industries using high technology, producing high-value-added products and those having almost no adverse impact on the environment are the types suited for promotion in island countries. For example, production of electronic components and, preferably, of software would be considered as ideal "industries" by some island countries. But such enterprises require a highly skilled work force, which as previously discussed is lacking in Pacific island countries. Therefore, educational systems should be improved rapidly, beginning at the primary and secondary levels. This implies that the profession of teaching must be made attractive to qualified persons. Education is also the means to change social structures, if it is granted that every child should be given an equal chance to progress. Public service should also be restructured, with selection being based on merit only. Privatization should also be implemented rapidly and more incentives should be given to private enterprise.

Conclusion

Migration of Pacific islanders was high during the second half of the 1980s, but economic difficulties and restrictive migration policies in host countries have resulted in (a) net losses of islanders from New Zealand since 1990, (b) the extension of migration towards Australia, the United States and American Samoa and (c), to a lesser extent, return migration.

Lower net losses would reduce the depletion of younger adult cohorts in population pyramids and age dependency ratios would decline, although the island economies are not yet able to provide jobs to a steadily growing population. Owing to high remittances from the large population of islanders overseas, South Pacific Governments still favour migration, including an increased brain drain, and ask for free access for migrants to developed countries of the Pacific Rim. However, the problem is not so much restrictive migration policies of host countries as it is integration of migrants in those countries' labour markets. Most islanders are not able to adjust to changes in the labour force and to compete with better qualified Asian migrants. Finally, many of the difficulties they face appear to stem from weak educational systems in the island countries in relation to traditional social and political structures. Further, it would not seem to be possible for a country to rely on the export of unskilled labour for the purpose of ensuring national economic development. The maintenance of the island way of life will be possible only if improvements are rapidly implemented in the educational systems and if the private sector is developed further. Attachment to the "Pacific way" should not mean that traditional institutions dominate education and the economy to the detriment of the Pacific islanders themselves.

Policy makers in the Governments of the small and large island countries should be aware that sustainable development cannot be based mainly on migration and remittances. On one hand, emigration of an unskilled labour force is a "dead-end" in view of the rising qualifications of labour forces world-wide and subsequent competition with better qualified migrants from other countries; the lowest level unskilled jobs will be taken by migrants from poor countries accepting very low wages. On the other hand, emigration of a skilled labour force, i.e. the brain drain, can result in serious shortages of qualified staff in Pacific island countries, which in turn will adversely affect the education of the younger generations. The strongest basis for the socio-economic development of Pacific island countries is raising the qualifications of their human resources through improved

universal education and equal opportunity employment, without regard to gender, and social and ethnic origins. Migration without human resources development will result in a loss of advantage for Governments and poor economic prospects for the people and migrants themselves.

Footnotes

1. We should question if this form of "migration" is really international migration at all, as Cook Islanders, Niueans and Tuvaluans hold New Zealand citizenship and Wallisians and Futunians are French citizens.

2. Actually the Statistical Abstract 1989 of Tonga shows declining population estimates from 1986 but, surprisingly, the 1993 issue of the Statistical Abstract assumes 0.6 per cent growth per annum since 1986.

3. Australian data on labour force participation by age group are not available. The Ethnic Communities Package, 1991 Census, Australian Bureau of Statistics, Canberra, Australia.

4. Proportions of agricultural workers among islanders in Australia and New Zealand are below 1 per cent, and have been included with production workers.

5. It should be pointed out that the number of native adult Melanesians and Tongans is very small and the results could therefore be affected by random variations.

6. As no data are available separately for Western and American Samoans in the United States, the number of the latter have been estimated, considering also that all American Samoans are considered to be "native" by the United States.

7. A similar trend in age-structure and youth unemployment was observed in the French Overseas Department, Martinique, Guadeloupe and Réunion between 1982 and 1990 (Domencah-Picouet and INSEE Réunion).

8. This includes American Samoa.

9. These positions contained in paragraphs 4.17-4.20 of the Plan might also be consequences of the fact that it seems difficult and socially unfair "to improve prospects for skilled and professional workers ... while holding unskilled workers' wages down to promote industrial development" (*op. cit.*, 4.10).

10. In Fiji all schools are officially open to all ethnic groups.

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Demographic Implications of Health Care in Sri Lanka

By 2020, Sri Lanka will experience South Asia's most rapid population ageing

By A.T.P.L. Abeykoon*

The size of a population, its growth and age-sex structure have many important socio-economic implications. The most fundamental of these factors in the field of health are their influence on health care service requirements. In Sri Lanka, changes in the number of persons attaining a particular age are having significant repercussions in producing both short- and long-term pressures on the status of health, utilization of health services and health service requirements. The current age-sex structure of Sri Lanka's population is the result of past trends in fertility, mortality and migration.

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Table 1: Population composition of Sri Lanka by broad age groups, 1946-1991

(per cent)

Year	Age group		
	0-14	15-64	65 and older
1946	37.2	59.3	3.5
1953	39.7	56.8	3.5
1963	41.5	54.9	3.6
1971	39.0	56.8	4.2
1981	35.2	60.5	4.3
1991	31.2	63.4	5.4

Source: *Population Statistics of Sri Lanka*, Population Division, Ministry of Health, June 1992.

Past trends

In 1946, when Sri Lanka took its first post-Second World War census, the population age structure was relatively young, with about 37 per cent of the total population being under 15 years of age. This proportion, however, increased to nearly 42 per cent in 1963 and thereafter gradually declined to 35 per cent at the last census taken in 1981. The estimated population for 1991 shows a further reduction of those under 15 years of age to 31 per cent (table 1).

The changes in the age structure are the result of the different rates of growth of population experienced during the period 1946 to 1991 as indicated in table 2. The high rates of population growth experienced during the period 1946 to 1963, mainly as a result of the growth in the rate of natural increase, initially caused the age structure to be weighted towards

Table 2: Sri Lanka population growth and contribution of natural increase and migration, 1946-1991

Year	Population (thousands)	Average annual growth rate (%)	Total increase (%)	Percentage contribution to total increase	
				Natural increase	Net migration
1946	6,657	–	–	–	–
1953	8,098	2.8	21.6	19.9	1.7
1963	10,582	2.7	30.7	31.0	–0.3
1971	12,690	2.2	19.9	20.9	–1.0
1981	14,847	1.7	17.0	22.6	–5.6
1991	17,247	1.5	16.2	18.9	–2.7

Sources: Censuses of Population; Registrar General's Department; and Population Division, Ministry of Health.

Table 3: Expectation of life at birth by sex in Sri Lanka, 1946-1988

(years)

	1946	1953	1962	1971	1981	1988*
Total	42.2	58.2	61.7	65.5	69.9	71.2
Male	43.9	58.8	61.9	64.2	67.7	68.8
Female	41.6	57.5	61.4	66.7	72.1	73.5

Source: Department of Census and Statistics.
* Estimated.

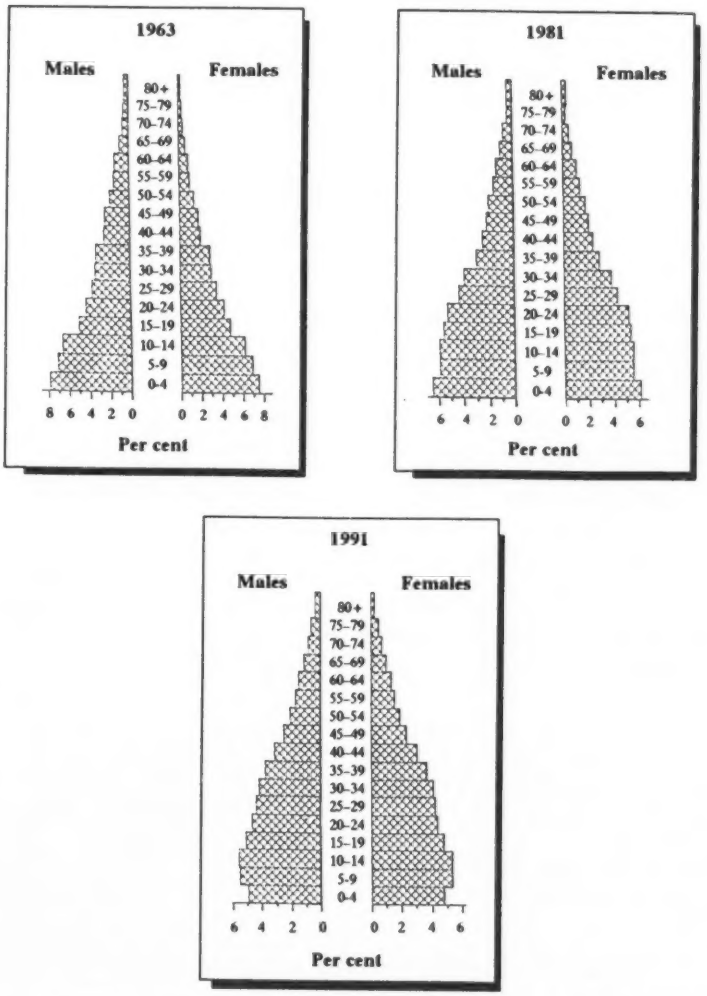
the younger ages. Subsequent reductions in fertility and net migration brought about reductions in the growth rate and proportionate share of population under 15 years of age. It can be seen from figure 1 that the population age pyramid is narrowing at the base and gradually expanding in the working ages.

The rapid growth of natural increase during the initial period was mainly the result of a sharp decline in mortality which commenced after 1946. The crude death rate, which was 19.8 per thousand population in 1946, dropped to 8.5 per thousand in 1963. Similarly, reductions in the infant mortality rate from 141 per thousand live births to 56 and in the maternal mortality rate from 15.5 per thousand live births to 2.4 were observed during the same period. Further reductions in mortality occurred in the ensuing decades. Effective application of DDT in national efforts to eradicate malaria, improvements in and growth of the health care system, improvements in agricultural production and subsidised distribution of food items and the expansion of free educational services, all have directly or indirectly contributed to mortality decline in Sri Lanka. The cumulative effect of the policies and programmes that brought about these improvements is reflected in the increase in expectation of life at birth from 42.2 years in 1946 to 71.2 years in 1988 (table 3).

While mortality and migration have contributed to the demographic transition, fertility decline has been the main contributory factor in the reduction of the population growth rate (Bongaarts, 1978). It can be seen from table 4 that the total fertility rate has declined from 5.3 children per woman in the early 1950s to around 2.3 during the period 1988-1993. It is worth noting that, during the period 1980-1982 to 1988-1993, the total fertility rate declined at an average annual rate of 4.0 per cent (Abeykoon, 1994b).

Data on age at marriage and contraceptive use indicate that these two variables have to a large extent contributed to fertility decline in Sri Lanka. The female mean age at marriage increased from 20.7 years in 1946 to 25.5 years in 1993. Similarly, the contraceptive prevalence rate increased from

Figure 1: Sri Lanka population pyramids, 1963-1991



Sources: Department of Census and Statistics, Censuses of Population; Population Division, Ministry of Health.

Table 4: Total fertility rates in Sri Lanka, 1952-59 to 1988-93

Period	Total fertility rate	Average annual decline %
1952-1954	5.3	–
1962-1964	5.0	0.6
1970-1972	4.1	2.5
1980-1982	3.4	2.0
1988-1993	2.3	4.0

Source: Department of Census and Statistics.
Note: Data for the 1988-1993 period exclude the northern and eastern provinces.

32.0 per cent in 1975 to 66.1 per cent in 1993. The initial fertility decline was due mainly to changes in nuptiality. Since the early 1970s, an increasing proportion of fertility decline has been attributed to the fall in marital fertility and less to changes in nuptiality (table 5). During the decade 1972 to 1982, the control of marital fertility largely through contraceptive use has accounted for more than 75 per cent of the fertility decline in Sri Lanka (ESCAP, 1986).

Future prospects and challenges

Given the high level of contraceptive prevalence and high motivation to control fertility, there is every likelihood that fertility will decline to the replacement level towards the end of this decade and continue to decline thereafter for a few decades. On the other hand, expectation of life at birth can be expected to improve slowly in the coming decades with rising living standards. International migration, which contributed significantly to the decline in the growth rate of the population during past two decades, is likely gradually to become less important as a component of population growth in the future. Given these plausible trends in fertility, mortality and migration, the population of Sri Lanka will increase from 18.2 million in

Table 5: Decomposition of the change in Sri Lanka's total fertility rate, 1953-1981

(per cent)

Component	1953-1963	1963-1971	1971-1981
Nuptiality	0.29 (96.7)	0.48 (53.3)	0.15 (21.4)
Marital fertility	0.01 (3.3)	0.42 (46.7)	0.55 (78.6)
Total	0.30 (100.0)	0.90 (100.0)	0.70 (100.0)

Note: The figures in parentheses indicate the relative contributions.

Table 6: Population projections for Sri Lanka, 1995-2020

(thousands)

Year	Total	Male	Female
1995	18,201	9,191	9,010
2000	19,250	9,691	9,559
2005	20,213	10,146	10,067
2010	21,073	10,549	10,524
2015	21,799	10,884	10,915
2020	22,362	11,138	11,224

Source: Abeykoon (1994a).

1995 to 22.4 million in the year 2020 (table 6). Sri Lanka's population is expected to stabilize eventually at around 24 million by the middle of the next century, which is about 33 per cent higher than the population in 1995.

The demand for personal health care services is not only a function of the total size of the population but also its age and sex structure and age-sex specific morbidity prevalance rates. In this article, attention is focused on the changing age structure of the population and its likely implications for health care. It is evident from table 7 that, with further slowing down of the population growth rate, the population age structure will continue to change, resulting in a decline in the proportion of those at the younger ages and an expansion of the population in the working ages; eventually it will bring about an increase in the old-age population. It is also seen that, towards the end of the second decade of the next century, the ageing process will accelerate, as indicated by the index of ageing. It is important to note that the index of ageing of patients is higher than that of the general population at ages above 65 years, as rates of illness and hospitalization are substatially higher in that age group than in the age group 0-14 years. It can

Table 7: Population composition of Sri Lanka by broad age groups, 1995-2020

(per cent)

Year	Age group			Index of ageing
	0-14	15-64	65 and older	
1995	28.0	65.9	6.1	21.8
2000	25.1	68.1	6.8	27.1
2005	23.5	68.9	7.6	32.3
2010	22.0	69.4	8.6	39.1
2015	20.8	69.1	10.1	48.6
2020	19.5	68.4	12.1	62.1

Source: Same as for table 6.

Note: Index of ageing is defined as the number of persons aged 65 years and older per 100 population aged 0-14 years.

be seen from the population pyramids in figure 2 that the population will continue to shrink at the base and buldge in the working ages and eventually expand at the older ages.

Figure 3 shows the time relationship between birth and future service requirements for personal health care and other services. It may be observed that health care requirements are high at birth and gradually decline to a minimum at age 15 and remain relatively low until around age 50 and thereafter rapidly increase until death. If the proportion of the population under 15 years declines, then this situation will reduce the pressure on the health care system. However, if the proportion of the population aged 15 to 49 years increases, given the relatively low morbidity prevalence of this age group, the sheer increase in the absolute number of people would increase the demand for personal health care services. Yet, at the same time there will be a demand for other services such as housing, employment and food. Thus, the health sector will have to compete for resources with other sectors such as industry and agriculture, which are generally considered as directly productive. For it is only with the increase in productivity of sectors such as industry and agriculture that health care for the increasing numbers of the elderly could be supported and sustained by the State.

Given the changing pattern of the population age structure in Sri Lanka, what implications will it have on health care in the future? It is evident from table 8 that the absolute number of births and children under five years of age will decline while women in the reproductive ages will increase in absolute terms. On the one hand, this situation will reduce pressure on maternal and child health services. However, with the projected increase in the sexually active population, there would be an increasing demand for reproductive health care elements such as the following: treatment of reproductive tract infections, sexually transmitted diseases and

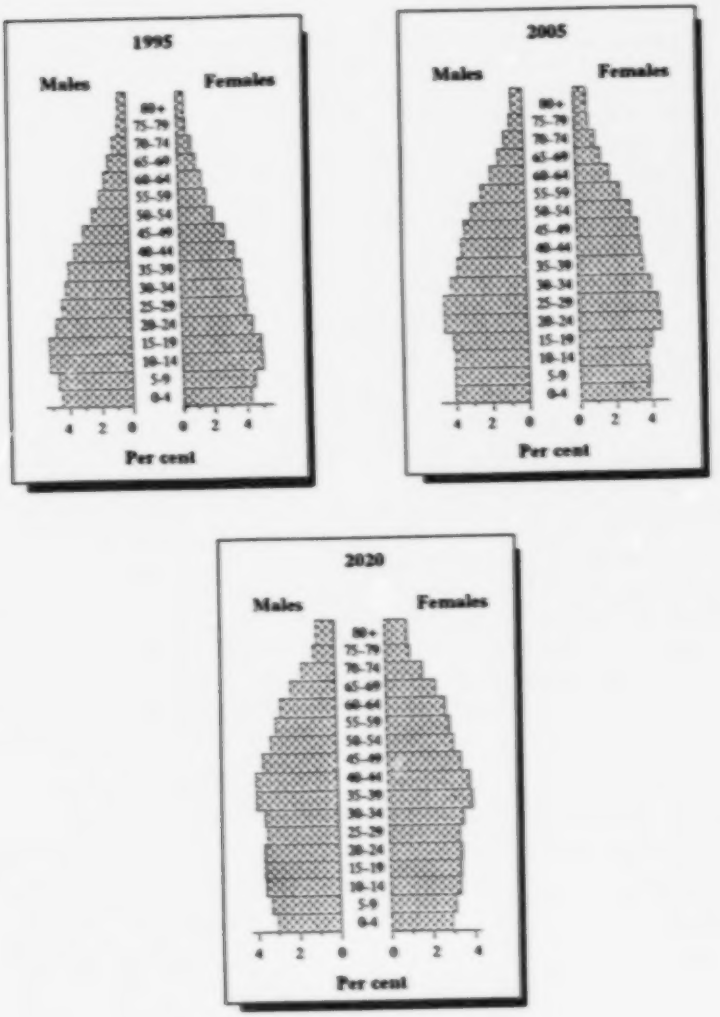
Table 8: Total number of births, young children and women in reproductive age group in Sri Lanka, 1995-2020

(thousands)

Year	Births	Children aged 1-4	Women aged 15-49
1995	330	1,291	4,966
2000	322	1,281	5,330
2005	315	1,246	5,493
2010	306	1,221	5,579
2015	292	1,180	5,628
2020	283	1,121	5,650

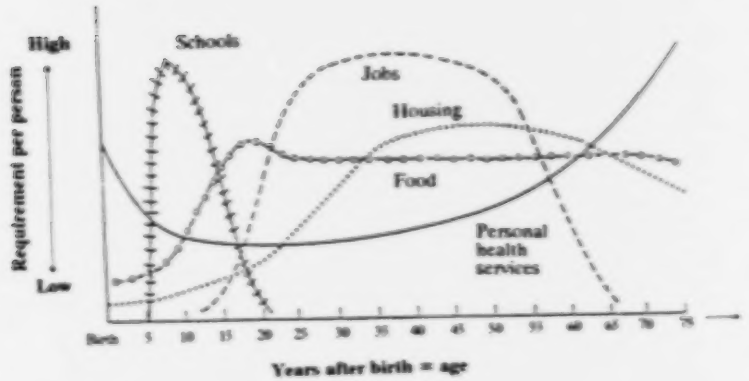
Source: Same as for table 6.

Figure 2: Sri Lanka population pyramids, 1995-2020



Sources: Abeykoon (1994c).

Figure 3: Time relationship between a birth and future services requirement



Source: Corsa and Oakley (1971)

other reproductive health conditions; information, education and counselling on human sexuality; reproductive health and responsible parenthood. Safe and effective protection from unwanted pregnancies, contraceptive choice and quality of care; prevention and appropriate treatment of infertility; and prevention of abortion and management of the consequences of abortion.

It can be seen from table 9 that the population age groups 45 to 59 years and 60 years and older will be increasing at a much faster rate during the next three decades than is currently the case. Although the population in the age group 20-44 will be increasing at a slower pace, the magnitude of the numbers is important because this segment of the population comprises both the youth and the most productive component of the labour force. Thus, emotional and behavioural problems of youth, manifested in suicides, violence, alcoholism and delinquency all of which are emerging health problems, need to be addressed. At the same time, with increasing numbers in the work force and changing industrial patterns, more information would be required on occupational diseases to enable the authorities concerned to enforce health and safety measures in the work place. Therefore, it is necessary to have organized mechanisms for the monitoring and surveillance of occupation-related diseases and accidents, most of which are preventable.

Table 9: Population increase in seclected age-groups in Sri Lanka, 1995-2020

(thousands)

Year	Age group					
	20-44		45-59		60+	
	Male	Female	Male	Female	Male	Female
1995	3,631	3,560	1,231	1,216	831	813
	(100)	(100)	(100)	(100)	(100)	(100)
2000	3,892	3,815	1,483	1,493	953	964
	(107)	(107)	(120)	(123)	(115)	(119)
2005	4,076	4,011	1,731	1,763	1,112	1,157
	(112)	(113)	(141)	(145)	(134)	(142)
2010	4,137	4,092	1,909	1,947	1,324	1,413
	(114)	(115)	(155)	(160)	(159)	(173)
2015	4,170	4,144	2,030	2,049	1,583	1,724
	(115)	(116)	(165)	(169)	(190)	(212)
2020	3,999	3,983	2,315	2,322	1,857	2,055
	(110)	(112)	(188)	(191)	(223)	(253)

Source: Same as for table 6.

Note: Figures within parentheses indicate the index of growth with 1995 figures taken as the base.

The proportion of population living in urban areas is expected to increase from 22 per cent in 1995 to about 40 per cent in 2020 (United Nations, 1995). With urbanization and industrialization there will be greater environmental pollution, increased density of population, shifts in occupational patterns and changes in consumption and life-styles. Thus, the progress of the epidemiological transition from communicable to non-communicable diseases should be followed by preventive strategies to minimize the negative effects of urbanization and economic growth on the health of the population.

The increase in population of those aged 45 to 59 is of significance because it is in this age group that most of the degenerative diseases begin to surface. Therefore, meeting the demands for health care of this segment of the population is important in that the most experienced workforce in terms of job skills is found in this group.

The population aged 60 years and older will increase at a faster pace. Within a period of 25 years between 1995 and 2020 the number of those aged 60 years and older will more than double. The increase will be faster among women owing to their higher life expectancy. Therefore, there will be increasing demands for health care among the elderly resulting from morbidity from diseases common to this age group, such as cancer, cardiovascular, neurological and rheumatological diseases as well as other

In the future, it is likely that the number of full-time homemakers will no longer be adequate to meet the needs of elderly family members. Young unemployed persons could be trained in order to fill this gap in health care delivery.

physical and psychological problems. Therefore, early action should be taken in paying attention to these emerging problems and developing services to address them. Among such action should be inclusion of the speciality of geriatrics in post-graduate medical training (De Silva, 1994).

The transition from high to low mortality has brought about an increase in morbidity. In the 1940s, when life expectancy in Sri Lanka was around 40 years, illness was commonplace, but it was mostly brief in duration. In the low-mortality regime prevalent today, the application of effective diagnostic and therapeutic technologies has diminished the probability of premature death among those who are already ill, and increased the absolute level of morbidity.

Concluding comments

Population projections for Sri Lanka for the next 25 years show that the ageing process will gradually gather momentum during the next two decades. By 2020, Sri Lanka will experience South Asia's most rapid population ageing. This phenomenon will demand that a higher proportion of financial resources be allocated for health care services in the coming decades.

The rapid increase of such financial resources required for health care services is attributable, in part, to a change in the disease pattern as well as to developments in medical technology. However, to a greater extent, it is due to an increase in the elderly population and the ageing of patients. In addition to financial resources, population ageing is likely to demand a great deal of human resources to cope with the fast increase in the number of elderly patients who need intensive human care.

There is a high likelihood that in the coming decades the number of full-time homemakers will no longer be adequate to meet the need for taking care of dysfunctional elderly in the home. Therefore, it is also necessary to provide appropriate training for out-of-school youth to enable them to take care of the elderly. Given the relatively high unemployment rates and the long waiting period for employment in Sri Lanka, youth could be mobilized to play a useful role in this regard. However, it is equally important to develop and expand community-based schemes and facilities so that care could be provided to those increasing numbers of patients as an alternative to the limited availability of home care.

In conclusion, it may be said that the growth of Sri Lanka's population and its changing age structure will influence the status of national health as well as future health service requirements with regard to health manpower, facilities and expenditures.

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Factors Affecting Variations in Fertility by States of India: A Preliminary Investigation

By Rafiqul Huda Chaudhury*

The most recent demographic data collected by India's 1992/93 National Family Health Survey revealed marked variations in fertility by state. Fertility, measured by the total fertility rate (TFR), ranged from as high as 4.82, 4.25, 4.00, 3.99 and 3.90 children per woman in the states of Uttar Pradesh, Arunachal Pradesh, Bihar, Haryana and Madhya Pradesh, respectively, to as low as the replacement, or lower, level of fertility at 1.90, 2.00 and 2.26 in Goa, Kerala and Mizoram, respectively. The national average TFR was 3.39 children per woman; the TFRs of the remaining 16 states varied between a low of 2.48 children per woman in Tamil Nadu to a high of 3.74 children per woman in the State of Meghalaya (see accompanying figure).

Various socio-demographic, cultural and economic factors may be adduced to explain these inter-state variations in fertility. The present paper is an attempt to identify the socio-economic factors, since an identification of such factors may lead to a selection of interventions amenable to policy prescriptions for narrowing inter-state variations in fertility through wider use of contraception and reduction in fertility of the states having levels of fertility above the replacement level.

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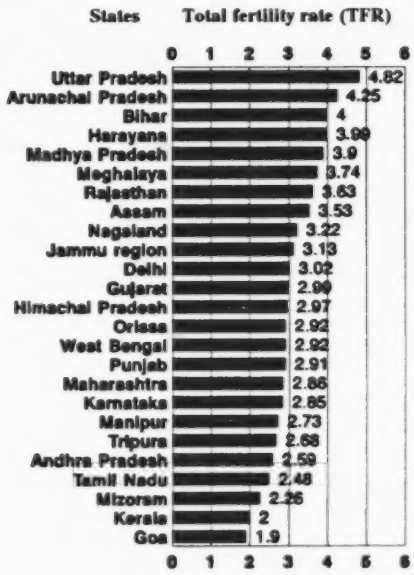
Figure: Total fertility rates, by state, India, 1992/93



Quality of data and limitations of the study

Data on births usually suffer from underenumeration, and the variations in fertility by state may also be due to the variations in underenumeration of births by state. However, in the absence of any hard evidence, there is no *a priori* reason to believe that the extent of underenumeration will vary from one state to another. Therefore, the variations in inter-state fertility cannot be attributed to differences in the enumeration of births between states.

The major limitation of the study is that it attempts only to account for inter-state variations in fertility behaviour at the macro level, and therefore does not take into consideration large intra-state, i.e. district, *tahsil* (subdistrict), ward, rural and urban, and micro or inter-individual variations in fertility. Although an analysis of intra-state and inter-individual variations in fertility would be very interesting and possibly more revealing than that of a state-level analysis, the data required to undertake this kind of analysis are not readily available. Given this constraint, the scope of the present study is confined to the analysis of inter-state variations in fertility.

Factors affecting inter-state variations in fertility

The inter-state variations in fertility are examined in relation to certain aspects of female status and the survival status of children. Female status is measured in terms of a woman's access to work outside the home and education. Work status is determined using four indicators: (a) proportion of women not currently working (NW), (b) proportion of women working on family farm (WFF), (c) proportion of women working for someone else outside the home (WSE) and (d) proportion of women self-employed (SE). Educational status is measured by five indicators: (a) proportion of women literate (LR), (b) proportion of women literate but not having completed primary level education (LPE), (c) proportion of women who have completed primary level education (PE), (d) proportion of women who have completed middle school (MS) and (e) proportion of women who have completed high school (HS). The survivorship status of children is determined by two indicators: (a) infant mortality rate and (b) child mortality rate. All these data at the state level refer to the period 1992/93, and were collected by the 1992/93 National Family Health Survey of India. The infant and child mortality rates refer to average estimates for the five-year period immediately preceding the survey, i.e. 1988-1992. The infant mortality rate is the probability of dying before exact age 1, expressed per 1,000 live births. Child mortality is the probability of dying between the first and fifth birthday, expressed per 1,000 children who reach their first birthday.

Hypotheses

Three hypotheses are posited for verification in this study, namely:

- The higher the proportion of women in a state who are working outside the home for someone else, the lower is the fertility of that state.
- The higher the proportion of women in a state who are formally educated, the lower is the fertility of that state.
- The higher the infant/child mortality levels of a state (in other words the lower the chances of survival of children), the higher is the fertility of that state.

The justifications for postulating each of these hypotheses are elaborated as follows:

Female work status and fertility behaviour

Greater female participation in the labour force has often been suggested as a means of reducing fertility. This suggestion is based on the

assumption that employment outside the home provides satisfaction for women, even acting as an alternative to the rearing of children. However, female labour-force participation will not result in lower fertility *per se* unless there is greater incompatibility between the roles of mother and worker. Role conflict is more likely among women working for someone else outside the home than among those working on the family farm or self-employed. Self-employed women and those working on the family farm may not have to go far from home for work and therefore can combine work with rearing children. While women working outside the home for someone else may find it difficult to combine work with rearing children because of the distance of the work-place from the home, they would therefore be constrained to restrict fertility in order to continue working.

In light of the preceding discussions, it is clearly evident that among various measures of female labour force participation status, only working outside the home for someone else is likely to be negatively associated with fertility, while working on the family farm or self-employment is likely to have positive or little effect on fertility. It is therefore hypothesized that the higher the proportion of women in a state working for someone else outside the home, the lower is the fertility of that state. Alternatively, the higher the proportion of women in a state who are not currently working, or who are working on the family farm, the higher is the fertility of that state.

Female education and fertility behaviour

Education may lead indirectly to wider use of contraception and reduction in fertility by providing opportunities for personal advancement, raising aspirations for a higher standard of living, ensuring better understanding of the reproductive process, and improving access to modern and effective means of contraception as well as freeing them from traditionalism, thus enabling them to pursue modernism. The negative effect of a lack of education on fertility has been consistently borne out by both historical and contemporary data. In consideration of the mechanisms in which education may affect fertility and the universal finding of the depressing effect of education on fertility, it is also hypothesized here that the fertility level of a state will vary inversely with the level of female education of the state. And this relationship between the total fertility rate on the one hand and the level of female education on the other will hold true for all indicators of female education employed in this study.

Child survival status and fertility behaviour

It has been often hypothesized that the lower the chances of survival of children, the higher will be the level of fertility. This hypothesis is based on the assumption that, in a situation where the incidence of infant/childhood

mortality is high, parents will be inclined to produce more children than necessary to ensure survival of at least a few into adulthood. In the backdrop of these arguments, it is hypothesized that the higher the infant/child mortality rate of a state (i.e. the lower the chances of survival of infants and children), the higher is the fertility of the state.

Findings

Relationships between female status and child survival status with total fertility rate

The bivariate relationship between female status and child survival status on the one hand and fertility behaviour on the other is examined using the technique of Pearsonian Correlation Coefficients (r). The value of correlation ranges between 0 and ± 1; the higher the value of the coefficient, the stronger is the relationship. These coefficients are presented in table 1.

The coefficients in table 1 lend support to the hypothesized relationship between total fertility rate on the one hand and female status and child survival status on the other. Female education, whether measured by (a) proportion of women literate (LR), (b) proportion of women literate but not completing primary level education (LPE), (c) proportion of women completing primary level education (PE) or (d) proportion of women completing high school (HS), shows a negative relationship with fertility, i.e. the higher the level of female education in a state, the lower is the fertility of that state, and this relationship between fertility and various measures of education is found to be statistically significant.

All the measures of female employment or work status are positively associated with fertility, although they are not significant, except for the one which assesses her participation in productive activities outside the home, i.e. the proportion of women working for someone else outside the home. Employment status, measured by the proportion of women working outside the home for someone else, is found to be negatively associated with fertility, i.e. the higher the proportion of women in a state working outside the home for someone else, the lower is the fertility of that state, and this relationship is found to be statistically significant.

The data also show a positive relationship between infant/child mortality and fertility, i.e. the higher the level of infant and child mortality in a state, the higher is the fertility of the state, and this relationship is found to be strong and statistically significant, particularly the relationship between child mortality rate and total fertility rate.

Table 1: Zero-order (Pearsonian) correlation coefficients between total fertility rate and measures of female status and child survival status

Measures of female status and child survival status	Coefficient (r)	Mean	Standard deviations
Measures of female employment status			
Proportion of women not currently working outside the home (NW)	0.2015	68.5	12.85
Proportion of women working on family farm (WFF)	0.1584	12.2	9.28
Proportion of women working for someone else (WSE) outside the home	–0.4765*	16.2	8.54
Proportion of women self-employed (SE)	0.0007	3.1	6.50
Measures of female education status			
Proportion of women literate (LR)	–0.6879*	53.3	316.20
Proportion of women with less than primary education (LPE)	–0.5138*	15.0	6.98
Proportion of women completing primary school (PE)	–0.6042**	12.0	4.99
Proportion of women completing middle school (MS)	–0.5952**	6.8	4.95
Proportion of women completing high school (HS)	–0.4920*	9.1	7.34
Measures of child survival status			
Infant mortality rate (IMR)	0.4984*	78.5	24.77
Child mortality rate (CMR)	0.6680*	33.4	13.53

Notes: * Significant at 0.01 level.
** Significant at 0.001 level.

We have so far examined the relationship between each of the independent variables and total fertility rate separately, i.e. at the bivariate level. In order to measure the net effect of independent variables on the dependent variable (TFR), multiple regression technique was used. While assessing the net effect of independent variables on fertility, we have selected only those variables which are strongly related to fertility and are least intercorrelated among themselves. This is to arrive at the true effect of the independent variables by minimizing the influence of multi-collinearity among the independent variables. Under the above selection criteria, independent variables chosen to represent female work, education and child survival status were the proportion of women working for someone else (WSE), proportion of women completing less than primary education (LPE) and child mortality rate (CMR), respectively. The functional form of the equation employed to measure the effects of female work status, education and child survival status on fertility is as follows:

$$TFRj = b_0j + b_1(WSEj + b_2(LPE)j + b_3(CMR)j + b_4(SES)j + e$$

where TFR = average total fertility rate

j = total fertility rate of state j, where j ranges between 1 and 25 states

b_0 to b_4 = coefficients

WSE = work status (i.e. the proportion of women working for someone else)

LPE = education status (i.e. the proportion of women completing less than primary education)

CMR = child mortality rate

SES = a vector of demographic variables

e = error term

The regression results assessing the independent effect of female work, education and child survival status on total fertility rate are presented in table 2.

The results of the regression analysis also confirm the earlier conclusion based on examination of the bivariate relationship in which the child mortality rate emerges as the single most important variable affecting fertility, followed by work status and education, when adjustment is made for all other variables.

The child mortality rate explains at least 18 per cent of inter-state variation in fertility over and above that which can be explained by all other variables. The total fertility rate of a state is significantly affected by its level of child mortality. The higher the child mortality rate of a state, the higher is the fertility of that state, and this relationship is statistically significant at the 0.0001 level. The implied child mortality elasticity at the sample mean was 0.237. The estimation implies that, at the sample mean, the increased child mortality rate of a state by one unit is associated with a 0.71 per cent increase in fertility of a state, and this increase is significantly different from zero.

A negative effect of women's work, i.e. the proportion of women working outside the home for someone else, on the total fertility rate is also confirmed by the data, and this relationship is statistically significant at the 0.003 level. The higher the proportion of women of a state working outside the home for someone else, the lower is the fertility of the state. For the total fertility rate, the implied work status elasticity at the point of sample mean is –0.121. The point estimate implies that, at the sample mean, increased women's participation in economic activities for someone else outside the home by 1 per cent is associated with a 0.74 per cent decline in

Table 2: Adjusted effect* of female work, education and child survival status on total fertility rate: regression analysis (OLS)

Variable	Regression coefficient	Standard error of B	T-value	Significance of T
Child mortality rate	0.024024	0.004806	4.999	0.0001
Proportion of women working for someone else	-0.025237	0.007364	-3.428	0.0027
Proportion of women with less than primary education	-0.028238	0.009094	-3.105	0.0056

R^2 = 85.26; adjusted r^2 = 82.32.

*Note: Adjusted for all the variables in the table including current use of contraception, and proportion never married.

fertility of a state, and this reduction is significantly different from zero. Women's work outside the home for someone else explains at least 9 per cent of inter-state variation in fertility over and above that which can be explained by all other variables.

Female education, measured by the proportion of women with less than primary education, also shows a strong negative association with the total fertility rate. The higher the proportion of women in a state completing less than primary education, the lower is the fertility of the state. The implied female education elasticity at the point of sample mean is 0.125 for total fertility. The point estimate implies that, at the sample mean, with a 1 per cent increase in the proportion of women in a state with less than a primary level education is associated with a 0.83 per cent decline in fertility, and this decline is significantly different from zero. Female education, i.e. the proportion of women with less than a primary level of education, explains at least 7 per cent of the inter-state variation in fertility.

Discussion and conclusion

The purpose of this paper has been to study the inter-state variation in fertility in relation to certain aspects of female status (education and employment) and the survival status of children (infant/child mortality). Of these three status variables, survival status of children, particularly the child mortality rate, emerges as the single most important factor explaining inter-state variations in fertility. The chances of survival of a child is strongly related to fertility: the lower the chances of survival of a child (in other words, the higher the child mortality rate), the higher is the fertility rate. However, our analysis does not show whether higher child mortality leads to higher fertility or higher fertility leads to higher child mortality.

Female labour force participation, particularly a woman's participation in activities outside the home for someone else, turns out to be the second most important variable affecting fertility. The higher the proportion of women in a state who are working outside the home for someone else, the lower is the fertility of that state. However, from our study it is not known whether women have fewer children because they like to work outside the home or they work outside the home because they have fewer children.

Female education, at less than the primary level, is the third most important variable explaining inter-state variations in fertility. The higher the proportion of women in a state formally educated, at least with a first to fourth grade education, the lower is the fertility of that state.

Data from the present study, although not presented here, also confirm a positive relationship between female education and the use of contraception. The propensity to use contraception in a state rises sharply with increases in the literacy rate of that state. And this relationship holds even when allowance is made for the effect of other variables. From these findings, it appears that the formal education of girls (for a minimum of 1-4 years) could help India go a long way towards achieving a major breakthrough in the use of contraception and in lowering fertility. However, our data do not show whether contraception and fertility among formally educated women are affected by specific knowledge, increased rationalization or the greater opportunities afforded by acquired skills, or whether education is merely a proxy measure of socio-economic status.

Policy implications

The study, although limited in scope, clearly points to the need for improving children's chances of survival, and also for raising women's status, guaranteeing better access to opportunities for their work outside the home and education, all of which will result in the reduction of fertility.

The average infant/child mortality rates in India, which are estimated around 79 per thousand and 33 per thousand, respectively, for the period 1988-1992, are still very high, even when compared with the corresponding rates of 23.3 per thousand and 8.4 per thousand prevailing in one of India's constituent states, Kerala.

To reduce infant/child mortality, a number of measures should be vigorously implemented: a comprehensive health and nutrition programme, especially focusing on women and children, providing for safe motherhood;

universal immunization of pre-school children; and the wider availability of safe drinking water and sanitation, including provisions for supplementary food and vitamins for the children of poor parents.

To improve the educational status of women, there is a need to open more schools and to change social attitudes about female education. In a traditional society such as India's, particularly in rural India and especially among Muslims, there are some reservations about co-education. Yet there is a shortage of girls' schools. Along with the expansion of girls' schools, provision should also be made to recruit more and more female teachers in schools. Casual empiricism has shown that parents find it more reassuring to send their daughters even to co-educational schools if its faculty comprises a good proportion of female teachers. However, mere expansion of the number of girls' schools and recruitment of more female teachers will not necessarily lead to more widespread female education; social attitudes must also be changed. Indian parents generally prefer to seek higher education for sons rather than daughters, mainly because males are considered a greater economic asset to the family than females. In addition, there is a need for a persistent drive against those social customs, beliefs and traditions which belittle the value of women as compared to men and promote the value of girl children through appropriate and vigorous information, education and communication (IEC) campaigns.

Pressure groups should be formed to continuously remind the Government of its obligation to provide free and universal primary education for children by the year 2000, since India is a signatory to the Declaration on Education for All, adopted by the 1990 World Conference on Education for All. India is also a signatory to the 1992 Bali Declaration on Population and Sustainable Development and the Programme of Action adopted by the 1994 International Conference on Population and Development, both of which instruments call for the implementation of national measures such as the ones described here.

Employment opportunities should also be created for women, particularly for illiterate women in rural areas, by making provision for skills training and "soft credit" facilities. Greater employment opportunities outside the home for women would not only provide alternative satisfaction to the rearing of children but it also would provide further chances for developing new skills and techniques which may broaden their outlook and vision, and consequently lead to adoption of the small family norm and a more resolute reduction in fertility nationally.

Purpose

The quarterly *Asia-Pacific Population Journal* is a periodical produced by the Population Division of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) with support from ESCAP and the United Nations Population Fund (UNFPA).

Its purpose is to provide a medium for the international exchange of knowledge, experience, ideas, technical information and data on all aspects of the field of population in order to assist developing countries in the region to improve the utilization of data and information.

Original contributions are invited, especially papers by authors from or familiar with the Asia-Pacific region. Ideally those papers will discuss the policy implications of population issues and solutions to problems and will report on experiences from which others may benefit.

Note to contributors

All material submitted for the consideration of the Editorial Board for publication should be in the English language. Ideally, the paper will be supplied in diskette form (5¼ inch) prepared in one of the major word-processing programs. A printed copy is also acceptable: typewritten in double or triple spacing on one side only of white paper (measuring approximately 8¼ x 11¾ inches or 21 x 30 cm). The margins should be generous, at least 3 cm (roughly 1 inch) wide, preferably more for the left-hand margin. Manuscripts should include a short abstract (100-200 words) of the issues addressed and the most important findings.

A complete list of references arranged alphabetically by author should also be included at the end of the manuscript. Please refer to examples in any issue of the *Journal*. Figures and tables should be clearly drawn/typed, each on separate sheets, if not contained in a separate diskette file.

Manuscripts are accepted on the understanding that they are subject to editorial revision. Contributors should indicate in an accompanying statement or letter that the material has not previously been published or submitted for publication elsewhere.

A brief introduction about the author (title and affiliations etc.) should also be included.

Because all manuscripts will be refereed by professionals in the field, the author'(s) name(s) or other identifying information should be placed on the title page only, in order to preserve anonymity.

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Readers of the *Journal* are invited to suggest topics for future coverage and to comment on the articles already published herein. Correspondence should be addressed to:

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